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THIS WEEK'S National Petroleum NEWS

Index to Coming Meetings

American Petroleum Institute, Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 7.

American Chemical Society, Atlanta, Ga., April 7 to 11.

American Oil Burner Association and National Oil Burner Show, Hotel Stevens, Chicago, April 7 to 12.

The Oil & Gas Well Supply Traffic Association, Hotel Jefferson, St. Louis, Mo., Apr. 8, 9.

American Petroleum Institute Division of Production, Southwestern District, Scharbauer Hotel, Midland, Tex., Apr. 10.

Gas Measurement Short Course, University of Oklahoma, College of Engineering, Norman, Okla., Apr. 15, 16, 17.

Kansas Oil Men's Association, Broadview Hotel Roof Garden, Wichita, Apr. 17, 18.

National Petroleum Association, Cleveland Hotel, Cleveland, O., April 23, 24.

National Oil Scouts Association of America, San Antonio, Tex., May 19, 20.

Natural Gasoline Association of America, Mayo Hotel, Tulsa, May 20, 21, 22.

American Society for Testing Materials, Atlantic City, N. J. June 23 to 27.

North American Gasoline Tax Conference, King Edward Hotel, Toronto, Ont., Sept. 2, 3, 4.

National Safety Council, Petroleum Section, Pittsburgh, Pa., Sept. 29 to Oct. 4.

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General

51 Domestic Oil Companies Report 28.3 Per Cent Gain in Profits in 1929 19
A.P.I. Report of Refinery Operations Week Ended Mar. 22 22
Santa Fe Springs Output Cut 20,000 Barrels as Gas Law Is Applied 23
Independent Producers to Meet in Ft. Worth April 18-19 24
Review of Late Production News 25
January Daily Gasoline Demand Up 1,900,000 Gallons 26
Mid-Continent Refiners Reduce Gasoline Stocks to Last Year's Level 29
U. S. Bureau Reports 8.2 Per Cent Gain in Motor Vehicles in 1929 30
Three Texas Areas Giving Promise of Steadily Increasing Yields 33
World's Deepest Producers, in Big Lake, Stir Texas Wildcatters 35
Prairie Opens New Pool in West Kansas; Oklahoma City Gusher Goes Wild 40
Seven New Wells Add 3000 Barrels to Output of Long Beach Field 44
Mexican Oil Production Dropped 5,000,000 Barrels in 1929—*by Valentine R. Garfias and C. O. Isakson* 47
Old Leases Gain in Production After Sunday Shutdown Is Started 51
U. S. Crude Production and Imports Week Ended March 29 105

Engineering

Refinery Saves $200,000 Yearly With Systematic Reclamation Plan 31
Correlation of Simpson Formation in Central South Oklahoma—*by T. E. Weirich* 36
Are Structures of Southwest Oklahoma Deep Seated or Superficial? 53
Drumright A.P.I. Chapter Hears Talks on Oil Treating 55
Modern Refining—Science and Practice—Article 17—*by Col. George A. Burrell* 57
Greater Efficiency Found in Tank Sweaters Than in Pans 67
Topping Plant Strips Wild Crude in Oklahoma City Pool 73

Merchandising

Oklahoma Farmers' Union Acquiring "Carry" Buik Stations 27
New Retail Gasoline Price War Breaks Out on West Coast 28
Pure Oil's 2,500,000 Gallon Terminal Anticipates Inland Water Traffic—Part I 77
Premium Gasoline Puts Emphasis on Quality, Not Price—*by Everett F. Wells* 85
Sign Board Is Feature of Rio Grande Station 90
Humble Builds Stations to 22 Types 130

Markets

Chicago, Gasoline Up Despite Bad Weather 109
Mid-Continent, U. S. Motor Advances 0.125 to 0.25 cent 111
Heavy Gulf Lubes Moving Well 111
Refinery Price Tables 112, 114, 115
California, Local Price War Depresses Market 118
Venezuelan Crude Quoted Higher 118
Pennsylvania, April and Spot Gasoline Active 119
Eastern Domestic, Gasoline Price Shading Increases 120
Gulf Coast, Bunker Oil Prices Higher; Gas Oil Lower 120
Wax, Foreign Bids Still Unattractive 121
Complete Seaboard Prices 122
Tank Wagon Price Tables 124, 125
Crude Oil Prices, All Fields 127, 129

Departments

The Editors' Viewpoint 21
The Mid-Continent Skyline 39
Our Industry 43
On The Western Front 45
New Refining Patents 63
New Equipment 72
Oil Trademarks for Copyright 82
New Stations Building 88
Along the Air Lanes 94
On The Lazy Bench 100
Oil Company Finance 132, 134

SECRETARY of the Interior Wilbur's committee of five appointed March 10, to make a complete and unprejudiced analysis of the outlook for petroleum supply and demand in 1930, is understood to have completed its report. Announcement of the committee's findings is expected to be announced at Washington within the next week.

The accompanying photograph of the committee was taken at New Orleans during the meeting of the American Association of Petroleum Geologists.

Shown from left to right are H. W. Lowrie, Jr., H. P. Grimm, J. Elmer Thomas, Joseph E. Pogue and Ray E. Collins.

Mr. Lowrie is a member of the geological firm of Fisher & Lowrie of Denver. Mr. Grimm is umpire for the California fields and Mr. Collins is the veteran Oklahoma umpire. Mr. Thomas, chairman of the committee, is a petroleum analyst for a firm of brokers. Dr. Pogue is a consulting economist with New York headquarters.

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Vol. 22 **CLEVELAND, April 2** **No. 14**

51 Domestic Oil Companies Report 28.3% Gain in Profits in 1929

By Roger B. Stafford
N. P. N. STAFF WRITER

CLEVELAND, March 25

EARNINGS reports for 1929 of 51 U. S. oil companies available to March 25 show a gain of 28.3 per cent over 1928 earnings. Nine pipe line systems reported a gain of 19.9 per cent, a tank car line 34.2 per cent, and two foreign companies 7.0 per cent.

The gain of the total 63 companies engaged in the production, refining, transportation and distribution of petroleum and its products, was 27.6 per cent. In amount of earnings, the gain was $91,400,875 over the 1928 earnings. Only two of these companies operated at a deficit in 1929 as against six in 1928.

Twenty-eight of the companies paid out $159,114,131 in cash dividends in 1929, which sum was 44.2 per cent of the net earnings of the group which earnings amounted to $359,232,751.

The 63 companies included in this compilation range from some of the relatively small struggling producing organization to a group of the leading majors.

The largest volume of earnings that goes to make up the total of $421,658,741 net profits of the 63 companies, was contributed by the Standard Oil Co. of Indiana, $78,499,754. This company the year before netted $77,337,166. The Indiana company showed a decrease in the earnings per share on the average number of shares outstanding during the year. This was because of a 50 per cent stock dividend paid last year and an increase in the number of shares due to an exchange of Indiana stock for stock of subsidiary companies, particularly that of the Pan American Petroleum & Transport Co. The average net per share in 1929 was $5.37 and in 1928, $8.33.

The Indiana company's 1929 earnings included an extra cash dividend of $3,118,065 from the 99.93 per cent owned Midwest Refining Co. which in 1928 paid the Indiana company $21,821,870 extra in cash. Earnings of the Midwest in 1929 amounted to $9,388,179 as compared with $5,743,670 in 1928, the increased profit being due, according to E. G. Seubert, president of the parent company, to "a more constant crude price, increased volume of sales, and a generally higher realization on all products."

Dixie Oil Co., a fully owned Indiana subsidiary, lost $1,313,926 on its 1929 operations when proration cut its production volume. The Sinclair Pipe Line Co., 50 per cent owned, netted $9,420,757 as compared with $8,388,285 in 1928.

Indiana company's cash dividends in 1929 amounted to $47,482,855 as compared with $32,416,528 in 1928. Stock dividend last year amounted to $116,232,119, par value of stock.

The Atlantic Refining Co.'s profits in 1929 were the largest in its history. Like in the case of the Indiana company changes in the capital structure made earnings per share less than in the preceding year. The average last year was $6.79 on the average number of common shares outstanding during the year and $6.20 on the number outstanding at the end of the year. This was after dividend the first quarter on the preferred stock which was retired early in the year. In 1928 the earnings were equal to $7.72 a share on the common after dividends on the preferred stock for a whole year.

Earnings of Barnsdall Corp. were $3.20 a share on 2,247,602 shares, average for the year, in 1929, as against $3.13 a share on an average of 1,288,592 shares in 1928. Of the total earnings of $7,205,162, the company paid out $4,831,191 in dividends.

Beacon Oil Co.'s earnings after dividends on the preferred stock

What 28 Companies Paid In Cash Dividends During 1929

Atlantic Refining Co.	$5,707,673
Barnsdall Corp.	4,831,191
Beacon Oil Co.	21,040
Borne Scrymser Co.	100,000
Gulf Oil Corp.	6,772,847
Honolulu Consolidated Oil Co.	2,362,250
Houston Oil Co.	536,856
Humble Oil & Refining Co.	5,937,815
Independent Oil & Gas Co.	2,712,092
Lion Oil Refining Co.	540,000
Mid-Continent Petroleum Corp.	2,855,365
Ohio Oil Co.	6,563,441
Phillips Petroleum Co.	3,983,390
Prairie Oil & Gas Co.	3,647,515
Richfield Oil Co.	4,545,248
Rio Grande Oil Co.	2,380,981
Simms Petroleum Co.	1,327,838
Solar Refining Co.	400,000
South Penn Oil Co.	2,550,000
Standard Oil Co., Indiana	47,482,855
Standard Oil Co., Kansas	240,000
Standard Oil Co., Kentucky	5,146,700
Standard Oil Co., Nebraska	650,891
Standard Oil Co., Ohio	1,892,745
Sun Oil Co.	1,598,562
The Texas Corp.	28,494,459
Tide Water Associated Oil Co.	7,846,039
Union Oil Co., California	7,986,338
Total	$159,114,131
1929 earnings of the companies	359,232,751
Per cent paid out in dividends	44.2

which was redeemed during the year, amounted to 16 cents a share on the 1,444,970 shares of common stock as compared with $1.09 a share on 947,747 shares of common in 1928.

Borne Scrymser Co. netted $2.00 a share on 40,000 shares in 1929 as compared with $2.54 a share in 1928, its balance sheet indicates. The company does not publish an earnings statement.

The figures shown in the accompanying table for the Continental Oil Co. are a consolidation of the earnings of the Continental Oil Co. of Maine and Marland Oil Co. for 1928 and the first half of 1929. The two companies were consolidated as of July 1, 1929. In the statement of the Continental for 1929 the earnings of the Continental of Maine for the first half of 1929, $1,058,419, were taken into the new Continental's accounts as an asset but in this compilation that sum was added to the $9,028,660 net profit reported by the company to make the comparison with 1928 more accurate. The 1928 figure was attained by subtracting Continental's 1928 profit from Marland's 1928 deficit.

The way the new Continental reports its 1929 earnings, the $9,028,660 was equal to $1.90 a share on the 4,743,103 no par shares which will be outstanding when all old Continental stock is exchanged for new Continental stock.

Gulf Oil Corp. netted $9.83 a share on 4,525,221 $25 shares as compared with $8.06 a share on 4,504,921 shares in 1928. Sales of subsidiary companies were larger last year than in 1928 although prices received for principal products were lower. Because of unusual competition and low prices prediction of 1930 earnings is impossible, W. L. Mellon, president, wrote stockholders.

Honolulu Consolidated Oil Co. netted $2.31 a share in 1929 and $2.49 a share, $10 par, in 1928. The decrease, according to A. C. Diericx, president, was due to restriction of production. Improvement is predicted by Mr. Diericx for 1930.

Houston Oil Co. netted after dividends on the preferred stock $4.78 a share on the $100 common stock. In 1928 it netted $5.11 on the common.

Humble Oil & Refining Co.'s net was $10.93 per $25 share as compared with $6.50 in 1928. Gross sales which almost reached $200,000,000, exceeded 1928 gross sales by approximately $30,000,000.

Independent Oil & Gas Co.'s net was $4.31 on 1,362,295 no par shares, as compared with $5.29 a share on 959,457 shares outstanding most of 1928 or $3.82 on 1,333,572 shares outstanding at the end of 1928. The 1928 earnings included those of the Manhattan Oil Co. of Kansas City for the last five months of 1928.

Lion Oil & Refining Co.'s net was $4.39 cents per no par share last year and 83 cents in 1928.

Louisiana Oil Refining Co. netted $1.05 last year on the 1,190,063 no par shares after dividends on the 6½ per cent preferred stock, as compared with $1.07 a share on the common in 1928. Profits were smaller although volume of products sold was much larger than in 1928.

Mid-Continent Petroleum Corp. netted $4.09 on 1,857,912 no par common shares after dividends on its 7 per cent preferred stock, as compared with $2.45 a share on 1,410,000 shares on common in 1928.

Earnings of Ohio Oil Co. averaged $5.14 a share on 2,400,000 $25 shares last year and $2.10 a share on the same number in 1928.

Phillips Petroleum Co.'s profit averaged $5.39 a share on the average of 2,450,430 shares outstanding during 1929 and $5.19 a share on the 2,543,316 shares outstanding at the end of the year. In 1928 the company netted $2.48 a share on 2,402,354 shares.

Prairie Oil & Gas Co.'s net was $5.89 a share on 2,433,365 outstanding $25 shares as compared with $4.34 a share on 2,426,181 outstanding shares in 1928.

The Richfield Oil Co. report does not include the earnings of the Universal Consolidated Oil Co., 51 per cent owned, or the Richfield Oil Corp. of New York. Inclusion of its share of the Universal's earnings would bring Richfield's net for 1929 to $9,396,859. Excluding the Universal earnings, Richfield netted, after dividends on the preferred stock, $4.03 a share on the 1,947,241 shares of $25 common stock outstanding at the end of 1929, as compared with $3.80 a share in 1928 on the 1,887,123 shares outstanding at the end of 1928.

Earnings of the Richfield Oil Corp. of New York were reported to have been approximately $400,000 from Aug. 15 to the end of the year.

Rio Grande Oil Co. reported a gain of approximately 250 per cent in 1929 over 1928 earnings. Last year its net was $4.58 a share on 1,236,270 no par shares as compared with $1.37 a share on 1,200,000 shares in 1928. Gross sales which amounted to $23,308,468 in 1929 were approximately 230 per cent larger than 1928 gross sales. It was the fourteenth consecutive year in which the Rio Grande's business has shown growth, L. E. Lockhart, president, informed stockholders.

Root Refining Co.'s profit was equivalent to $3.27 a share on 103,000 no par shares of common stock after dividends on the prior preference and preferred stock. In 1928 its predecessor company, Root Refineries, Inc., netted $3.56 on 102,000 common shares then outstanding.

Signal Oil & Gas Co. netted $6.12 a share on the 209,175 average number of Class A and Class B $25 par common stock outstanding in 1929 and $6.11 a share on an average of 207,940 shares in 1928.

Simms Petroleum Co.'s net was equivalent to $2.79 a share on 835,362 $10 shares in 1929 and 41 cents on 806,038 shares in 1928.

South Penn Oil Co. netted $4.28 a share on 1,200,000 $25 par shares last year and $4.89 a share on 800,000 shares in 1928. Considerable of

Comparative Earnings of 63 Companies Last Two Years

	1929	1928
Amer. Republics Corp.	(a)$660,572	(a) $105,590
Atlantic Refining Co.	17,332,417	16,848,807
Barnsdall Corp.	7,205,162	4,039,861
Beacon Oil Co.	247,615	1,209,815
Borne Scrymser Co.	(c) 79,971	(c) 101,661
Continental Oil Co.	10,087,079	(d) 1,639,875
Forest E. Gilmore Co.	257,368	(a)115,566
Gulf Oil Corporation	44,489,685	36,325,140
Honolulu Cons. Oil Co.	2,200,762	2,351,348
Houston Oil Co.	1,731,469	1,812,517
Humble Oil & Rfg. Co.	32,535,080	19,277,145
Indep. Oil & Gas Co.	5,882,179	5,092,858
Lion Oil Refining Co.	1,184,478	206,411
Louisiana Oil Refg. Corp.	1,508,171	1,535,317
Mid-Cont. Pet. Corp.	7,683,378	3,897,056
Mountain & Gulf Oil Co.	(b)557,206	(b)645,023
National Refining Co.	1,845,485	1,700,614
New Bradford Oil Co.	610,721	1,146,282
Ohio Oil Co.	12,347,649	5,054,955
Phillips Petroleum Co.	13,212,591	5,960,171
Prairie Oil & Gas Co.	14,331,643	10,541,597
Prod. & Refiners Corp.	(d)1,136,627	934,484
Red Bank Oil Co.	(b)519,178	(b) 63,881
Reiter Foster Oil Corp.	229,184	415,532
Richfield Oil Co.	8,554,494	7,818,076
Rio Grande Oil Co.	5,659,943	1,649,600
Root Refining Co.	500,258	528,326
Salt Creek Cons. Oil Co.	(b)611,893	(b)656,339
Salt Creek Prod. Assoc., Inc.	(b)2,723,991	(b)3,326,429
Shreveport-Eldorado Pipe Line Co.	(a,b)446,667	(a,b)823,005
Signal Oil & Gas Co.	1,280,829	1,267,979
Simms Petroleum Co.	2,328,802	334,064
Solar Refining Co.	(d)223,063	450,238
South Penn Oil Co.	5,139,296	3,911,165
Standard Oil Co., Indiana	78,499,754	77,337,166
Standard Oil Co., Kansas	1,512,912	292,228
Standard Oil Co., Ken.	6,652,992	4,745,604
Standard Oil Co., Neb.	(c)860,271	(c)957,886
Standard Oil Co., Ohio	4,202,385	3,896,549
Sun Oil Co.	8,242,491	5,008,027
Superior Oil Corp.	(a)831,269	(d)662,152
Swiss Oil Corp.	406,957	284,143
The Texas Corp.	48,318,072	45,073,879
Texas Pacific Coal & Oil Co.	787,286	201,793
Tide Water Assoc. Oil Co.	14,000,688	14,132,542
Transcontinental Oil Co.	4,723,803	1,506,803
Union Oil Co., Calif.	15,019,635	11,101,935
Univ. Cons. Oil Co.	1,651,696	(d)16,619
Washington Oil Co.	152,314	129,473
H. F. Wilcox Oil & Gas Co.	(a)518,928	468,612
Y Oil & Gas Co.	(d)43,470	(d)39,323
Total 51 Cos.	$388,963,509	$302,942,143
Gain in 1929	$86,021,366	or 28.3%
FOREIGN OIL COMPANIES		
British American Oil Co.	$3,235,926	$3,214,705
Venezuelan Pet. Co.	371,630	153,734
Total 2 Companies	$3,607,556	$3,368,439
Gain in 1929	$239,117	or 7.0%
TANK CAR TRANSPORT		
United Tank Car Co.	$3,666,589	$2,731,957
Gain in 1929	$934,632	or 34.2%
PIPE LINE COMPANIES		
Buckeye Pipe Line Co.	$1,153,286	$1,207,029
Cumberland Pipe Line Co.	6,555	102,134
Eureka Pipe Line Co.	17,369	64,726
Indiana Pipe Line Co.	837,489	849,112
New York Transit Co.	165,231	(d)1,549,412
Northern Pipe Line Co.	140,017	399,632
Southern Pipe Line Co.	123,990	(d) 1,442
South West Pennsylvania Pipe Lines	176,698	340,317
Total Eastern	$2,620,635	$1,412,096
Prairie Pipe Line Co.	22,800,453	19,786,612
Total 9 pipe lines	$25,421,088	$21,198,708
Gain in 1929	$4,222,380	or 19.9%
Grand Total 63 Cos.	$421,658,742	$330,241,247
Gain in 1929	$91,417,495	or 27.6%

(a) Before federal taxes.
(b) Before reserves.
(c) Indicated.
(d) Loss.

The Editors' Viewpoint

National Petroleum News

Is It Spirit, or Letter, Of the Code That Counts?

SOME oil companies, apparently, did not discover the business advantages of the lease and agency agreements, as a means of tying up gasoline outlets, until after the code of marketing practices was put into effect.

Certainly, the use of this arrangement, whereby the dealer becomes directly the agent of the oil company and is therefore exempt from the restrictions which the code puts upon ordinary resale accounts, has increased greatly in some parts of the country since the code went into effect.

So much so has the agency agreement been taken up by some of the larger oil companies that the average person can hardly restrain the question as to the good faith of these companies in living up to the spirit of the code.

True it is that there is no provision in the code of marketing practices itself which pertains to the making of lease and agency agreements by the oil company with station owners, or operators under lease from the property owner.

The failure of those who drew up the code to include in it any recognition of this method of handling resale trade has been questioned by the Independent marketers. As far as our experience goes, however, the lease and agency agreements, as used prior to the time the code became effective, were not generally sources of friction between the larger companies and the Independent marketers. They were openly used by such companies as The Texas Co. and the Standard Oil Co. of Indiana, among others, and they had their place in making a mutually attractive arrangement with a certain type of reseller.

For the reseller who owned his station and property on which it was situated, or at least had a long term lease upon it, and who owned his station equipment and was a responsible individual, there are certain advantages in tying up to the product of one company, thereby enjoying the advantages of its advertising and sales help and still maintaining an independence that cannot come to the individual who is simply an employe of the oil company.

For the oil company such an arrangement provided a means whereby it could secure and hold the business that an energetic individual builds up in a community through his own efforts and it also is the only means whereby the oil company can control the prices to the public at which the station owner sold, without buying his business outright.

Since the code went into effect, however, these mutually advantageous characteristics seem to be largely forgotten by the oil company in signing up dealers under this form of contract. They are being used, in many cases, to tie up dealers under as long as five-year contracts under terms which allow the oil company to give the dealer equipment and services which are expressly forbidden in the code under open resale arrangements with station owners and operators.

The directors of the American Petroleum Institute took cognizance of this turning to the agency agreement as a practical evasion of the code a few months ago and adopted a resolution which does not seem to have been given great attention so far. It read:

"That, effective immediately, the words 'bona fide lease' in Rule 2 of the Code of Marketing Practices be interpreted to mean only formal written leases of not less than one year's duration—stating the actual consideration to be paid as rental by the lessee, containing no privilege of cancellation on the part of the lessor in less than one year, and bearing the written consent of the fee owner of the property; to be filed for record by the lessee within 30 days after execution." Rule 2 of the code provides that where oil companies lease stations and sub-lease them to the same individual, or another, to operate the second lease must not be at a reduced rental and must take into consideration improvements made by the oil company. Such a releasing might be part of an agency agreement, but not necessarily.

To sum it up, however, this drawing of hair line definitions to prevent violations of the code should not be necessary. If the industry wants the code it will live up to it in spirit and every marketer knows what that spirit is. If it does not want the code all the definitions in the world will not prevent violations in spirit at least.

More Attention for the Field Men

SOMETHING must be done by the American Petroleum Institute quickly if the fine spirit of helpfulness displayed by production men and engineers in forming the old Division of Development and Production Engineering is to be maintained.

Since reorganization of the Institute and attendant creation of the Division of Production, the sections and field chapters of that old division feel that they are homeless. On the diagram recently issued by the Institute they are shown dangling midway between heaven and earth. The old committees on drilling and production practice have been consolidated into one and now that committee has nothing to do with the conduct of the regional sections and chapters. The latter are responsible only to the big general committee up at the top, and it has so many other things to look after that the men who make up the chapters and sections have the idea that nobody is paying them any attention.

The sections and field chapters can coast under their momentum for a time, but not indefinitely. Coordination of their activity must be effected if they are to keep up their interest.

the increased profits of the South Penn are reported to have come from the Pennzoil Co., which is its refining and marketing subsidiary. South Penn bought a 51 per cent interest in the Pennzoil Co. in 1926 and has since increased its holdings. South Penn paid a 50 per cent stock dividend last spring.

Standard Oil Co. of Kansas increased its earnings in 1929 more than five times those of 1928. Its net per $25 share last year was $4.73 on 320,000 shares as compared with 91 cents in 1928.

Standard Oil Co. of Kentucky netted $2.58 a share on 2,577,124 $10 shares last year and $1.85 a share in 1928 on the 2,565,460 shares outstanding at the end of that year or $6.94 a share on 684,120 $25 par shares which were outstanding most of 1928.

Standard Oil Co. of Ohio netted $6.61 a share on its 560,000 shares of $25 par common stock after dividends on its 7 per cent preferred. In 1928 the Ohio company's net was $6.08 a share on the same amount of common stock.

Sun Oil Co. netted $6.12 a share on the average number of no par common shares outstanding during 1929 or $5.62 on the 1,413,072 shares outstanding at the end of the year. In 1928 its net averaged $3.92 a share. These averages are after deduction of dividends on the preferred stock. Sun paid common stockholders 9 per cent in stock dividends in 1929 in addition to $1 a share.

The Texas Corp. netted $5.12 a share in 1929 on the average of 9,433,164 shares outstanding during the year and $4.90 a share on the 9,850,050 shares outstanding at the end of the year. In 1928 the company earned $5.56 a share on an average of 8,107,763 shares and $5.34 on the 8,443,354 shares outstanding Dec. 31, 1928. Shares are of $25 par value.

Texas Pacific Coal & Oil Co. netted 84 cents a share on its 932,403 $10 shares in 1929 and 24 cents a share on 844,804 shares in 1928.

Tide Water Associated Oil Co. in 1929 averaged $1.73 a share on 5,560,424 shares of no par common stock after dividends on preferred stock as compared with $2.01 a share on 4,852,519 shares of common in 1928. Tide Water Oil Co., its subsidiary, netted $2.36 a share on 2,191,820 shares of no par common in 1929, after preferred stock dividends, and $3.85 a share on 2,178,776 shares of common in 1928. Association Oil Co., its western subsidiary, netted $3.90 a share on 2,290,412 shares of $25 common stock last year and $3.31 in 1928.

Union Oil Co. of California netted $3.56 a share in 1929 on the 4,215,953 shares outstanding at the end of the year, as compared with $2.93 a share on 3,795,057 shares outstanding at the end of 1928. Shares are $25 par value.

Universal Consolidated Oil Co., controlled by Richfield Oil Co. but whose income was not included in the 1929 earnings statement of Richfield, netted $4.61 a share on 358,104 shares of $10 common stock. In 1928 the company had a deficit.

Washington Oil Co. averaged $7.70 a share on the average 19,767 shares of $25 stock outstanding in 1929 and $6.43 on the 23,686 shares outstanding at the end of the year. In 1928 it averaged $8.19 on the 15,849 shares outstanding at the end of the year.

H. F. Wilcox Oil & Gas Co. netted $1.21 a share on the 428,967 outstanding shares at the end of 1929. In 1928 this company netted $1.09 a share.

Refinery Curtailment O.K.'d by A.P.I.

NEW YORK, March 31.—Approval of the principle of the Federal Oil Conservation Board's proposal for a one-seventh curtailment of refinery operations was voted today at a meeting of the general committee of the division of refining of the American Petroleum Institute.

W. R. Boyd, Jr., executive vice-president of the institute, was instructed to draft appropriate resolutions covering the approval of the principle.

Refiners Cut Crude Runs 44,100 Barrels

CLEVELAND, April 1

REFINERS reduced their crude runs to stills 44,100 barrels daily average in the week ended March 29 according to reports gathered by the American Petroleum Institute from plants representing 95.6 per cent of the U. S. capacity. Average runs for the week were 2,490,800 barrels as compared with 2,534,900 barrels in the week ended March 22.

In the past week substantial cuts were made by refiners in California and Texas with smaller amounts in the Rocky Mountains and in Louisiana and Arkansas. Texas alone cut runs 45,000 barrels daily average and California 39,000 barrels daily.

While these groups were curtailing operations, substantial increases were being made in the Appalachian and middle western groups and a minor increase on the east coast. Indiana-Illinois refiners increased their runs to stills 21,100 barrels daily average. Oklahoma, Kansas and Missouri refiners increased their runs 15,400 barrels and the Appalachian group 11,200 barrels daily average.

The Indiana-Illinois group maintained the highest level of runs of any group in the country. Its plants operated at 87.9 per cent of rated capacity. California plants were down to 60.2 per cent of capacity and all reporting plants ran 70.9 per cent of capacity as compared with 72.5 per cent the previous week.

American Petroleum Institute report of refinery operations in the United States for the week ended Mar. 29, compared with the week ended Mar. 22

Districts	Per Cent of Capacity Reporting	Daily Av. Crude Run to Stills Wk. Ended Mar. 29 (Barrels)	Daily Av. Crude Run to Stills Wk. Ended Mar. 22 (Barrels)	Per Cent of Reporting Capacity Operated Wk. Ended Mar. 29	Per Cent of Reporting Capacity Operated Wk. Ended Mar. 22	Stocks Reported in Thousands of Barrels: Gasoline Stocks Mar. 29	Gasoline Stocks Mar. 22	Gas & Fuel Oil Stocks Mar. 29	Gas & Fuel Oil Stocks Mar. 22
East Coast	100.0	445,800	442,400	73.6	73.0	9,550	9,266	6,314	6,462
Appalachian	91.0	92,000	80,800	78.9	69.3	1,865	1,828	668	657
Ind.-Ill.-Ky	99.5	327,900	306,800	87.9	85.7	8,479	8,202	3,056	3,024
Okla.-Kan.-Mo	89.1	313,600	298,200	76.2	72.4	4,700	4,583	3,622	3,509
Texas	90.4	557,400	602,500	78.2	84.5	8,153	7,698	11,072	11,549
La.-Ark	96.8	163,000	169,900	62.2	64.8	2,553	2,522	2,008	2,064
Rocky Mountain	93.6	54,900	59,100	39.4	42.4	3,049	3,109	1,059	1,052
California	99.3	536,200	575,200	60.2	64.5	16,390	16,622	108,387	108,936
Total U. S.	95.6	2,490,800	2,534,900	70.9	72.5	54,739	53,830	136,186	137,253
Texas (Gulf Coast)	99.4	423,400	453,800	80.9	86.7	7,076	6,520	8,490	8,917
La. (Gulf Coast)	100.0	107,400	108,100	72.8	73.3	2,207	2,163	1,174	1,222

Santa Fe Springs Output Cut 20,000 Barrels as Gas Law Is Applied

By Jack N. Westsmith
N. P. N. STAFF WRITER

LOS ANGELES, March 28

THAT the Lyon Gas Law will result in the suppression of the independent operators was the contention of representatives of several large independents in the Santa Fe Springs field, at a closed meeting held to discuss inequities that are arising through enforcement of the recently granted preliminary injunction.

Mechanical difficulties encountered by engineers of oil companies operating at "the Springs" in their effort to comply with the order of the Superior Court calling for reduction of gas production to 295 million cubic feet of gas per day, have kept the actual production at nearly 100 million cubic feet in excess of this figure.

Following the petition of a number of companies asking for an increase in their allowable gas output the court prorated an additional 5 million cubic feet of gas among such operators as might be unduly injured by enforcement of the injunction.

The court has set April 2 as the deadline for operators at Santa Fe Springs to reduce the daily waste of gas down to the required amount of 100 million cubic feet. On April 14, Superior Judge Hazlett will hear various complaints by operators and testimony of actual conditions under operation of the law by the group of three experts appointed by the court following the granting of the injunction, March 19.

It is expected further modifications of the restraining order will be made when the hearing is reopened. Along just what lines these changes will be made has not been entirely determined, but from numerous expressions by engineers and legal counsel for the defendant oil companies it appears likely that the court will be asked to set a straight horizontal cut of gas production throughout the field. That is, instead of prorating the gas cut per lease according to oil production from the respective lease irrespective of the position of such lease on the structure, operators may be ordered to reduce the field's potential gas production of nearly 550 million cubic feet to 300 million cubic feet or approximately 45.5 per cent.

For the first time since voluntary curtailment measures were initiated

By Telegraph

LOS ANGELES, March 31.—The industry's fact finding committee today set actual California crude production for March 28 at 612,389 barrels, approximately 3000 barrels above the state's curtailment goal. Potential production of the state was announced as being 1,081,382 barrels per day. Santa Fe Springs production March 30 was 126,689 barrels.

in California, crude oil production at Santa Fe Springs was estimated to have been reduced to below the allowable. A number of companies with leases within the first contour lines have found it necessary to kill producing wells in order to obey the provisions of the injunction, with the result that crude production was reduced by March 27 from a potential of 232,140 barrels to an actual daily output of 129,429 barrels or 4092 barrels under the field's allowable.

Production of natural gas was reported to be still approximately 385 million cubic feet per day or 85 million cubic feet in excess of the new allowable provided for in the injunction. Unless drastic changes are made in this order it is predicted that oil production will be reduced to the 110,000 barrel mark by April 14.

The following table gives comparative oil and gas production figures by several of the leading companies at Santa Fe Springs prior to and after enforcement of the gas conservation law:

Company	Oil Production (bbls) March 21	Oil Production (bbls) March 26	Gas Production (MCF) March 21	Gas Production (MCF) March 26	Gas Production (MCF) Allowable
General Petroleum	29,265	23,815	124,720	92,030	71,314
Union Oil Co.*	26,300	28,730*	54,590	52,911	57,998
The Texas Co.	14,300	14,050	36,435	34,120	27,395
Wilshire Interests	18,947	14,204	59,210	41,415	22,576
George F. Getty	11,353	9,220	94,460	49,800	22,681

General Petroleum Corp. killed 19 wells on its various holdings at Santa Fe Springs in an attempt to reduce its gas production to the allowable of 71,314,000 cubic feet per day. This company now has 44 wells off production including 26 that have been shut in during the voluntary curtailment program. It has shut down all its high oil-to-gas ratio wells, inside wells, and offset wells where production agreements exist.

*Slight increase registered by Union in crude oil production partially due to opening up of shallow zone wells that have practically no gas production.

Representatives of twelve oil companies operating at Santa Fe Springs, who were not included in the first injunction suit, appeared before the Superior Court March 27 on an order to show cause why they should not be also enjoined from wasting natural gas.

Stanley C. Herold, former professor at Stanford University, and now employed by Union Oil Co. in research work in connection with the Kettlemen Hills area, was called by the state.

As part of his testimony Mr. Herold made the following statement: "Justice is impossible unless the demands of the injunction are in full accord with the laws of nature. An emergency exists at the present moment and in my opinion a temporary alleviation of a distressing situation may have been more equitably based upon a flat cut throughout the field. If it is determined that the outlets for the field, plus the allowable wastage, amounts to 285 million (now 300 million) cubic feet, and the total amount of gas production amounts to some 530 million cubic feet, then it would be necessary to cut production 53.7 per cent.

"If each operator is then required to cut the gas he is producing by this percentage, the total production of the field will be reduced to the required amount, and each can produce as many barrels of oil as possible, so long as his gas allowance is not exceeded. He can also take the oil from any zone he chooses.

This attitude of resulting injury to some operators at "the Springs" has caused the prediction to be made that the courts hearing the cases on the Long Beach and Kettleman Hills fields will diverge from the ruling made for Santa Fe Springs in which case actual impairment of the effectiveness of the law may result.

It has been pointed out by an engineer of George F. Getty Inc., a

large independent company, that had to kill four wells on the top of the structure reducing its gas production by 30 million cubic feet per day, that the existing preliminary injunction made it impossible for wells on some leases to produce any oil. As an example he indicated two wells on one lease that have been producing approximately 600 barrels of oil and 10 million cubic feet of gas per day each, under heavy beans.

Through the enforcement of the order the company killed one well and endeavored to reduce the gas production from the other to the allowable output of 1,700,000 cubic feet with the result that the oil production was reduced to about 35 barrels per day.

He also stated that in one particular well where the oil-to-gas ratio was initially 22,000 cubic feet per barrel of oil, that as the bean was applied the proportionate amount of gas increased so that at the end of three days of curtailment efforts the ratios had increased to 275,000 cubic feet to one barrel of oil. The well ultimately had to be killed to prevent a blow-out although the oil production had been reduced from 450 barrels to 15 barrels and the gas production from 10,100,000 cubic feet to 4,125,000 cubic feet.

Independent Producers to Meet In Ft. Worth April 18-19

Staff Special
TULSA, March 29

THE Independent Petroleum Association of America, under whose banners the oil tariff campaign was fought, will hold its convention in Fort Worth, April 18 and 19. Earlier plans to hold the meeting in Kansas City or St. Louis were abandoned as a greater part of the membership is located more conveniently to Fort Worth.

In response to a request by NATIONAL PETROLEUM NEWS for an outline of the program of the meeting, Wirt Franklin, president, wrote:

". . . The purpose of the Fort Worth meeting of directors and membership of the Independent Petroleum Association of America on April 18 and 19 is to thoroughly reorganize the association along such lines as the directors shall recommend and the membership approve and for the purpose of making further plans to carry on the fight for a tariff on oil as the major activity of the association.

"To that end the association will arrange for a campaign of publicity to inform the consuming public of the United States of the basic facts of the petroleum industry, domestic production and refining and foreign production and refining as same affects the United States, and imports of both crude and refined products into the United States.

"It is our purpose to inform the consuming public of the United States of the true situation and the effect of the so-called conservation plan, if it is carried to its ultimate conclusion, upon the consumers of the United States.

"It appears that this so-called conservation plan has for its ultimate object the gradual shutting in of American production and the furnishing of the American market with foreign oil. The people should know this.

"It is our purpose to tell them and to explain to them the reasons why such a plan will not be in their interest but, on the contrary, in the interest of creating a monopoly of the oil business of the United States comparable to that in other parts of the world."

Since his return from Washington, Mr. Franklin has been busy with his interests in the Oklahoma City field and elsewhere.

He has found time to appear in public meetings. The Oklahoma City Chamber of Commerce gave a dinner in his honor, at which business leaders and state officials, including Governor Holloway, spoke. He was the chief speaker at the first dinner of the recently organized North Texas Oil & Gas Association, in Wichita Falls.

Foreign Subscribers—Please Note!

IT HAS just been called to our attention that a man, not authorized by us, has been soliciting subscriptions to NATIONAL PETROLEUM NEWS abroad, particularly in London.

NATIONAL PETROLEUM NEWS has authorized no one to solicit subscriptions in any countries abroad. Please, therefore, do not give your subscriptions to any one who may solicit you, but send it direct to us at Cleveland, Ohio, U. S. A.

We would also appreciate very much if any of our foreign subscribers are approached for their subscription to communicate with us, giving us the name and description of the man who claims to be an authorized representative.

Extend Proration After April 1

TULSA, March 29.—Without change the Oklahoma corporation commission on March 27 approved the plan of operators for proration of flush and semi-flush pools of the state and issued an order which takes up on April 1 where the present order leaves off that morning. The figure set for the states production is 600,000 barrels.

Under the order the East Earlsboro field is prorated to one-third of its potential and the new South Earlsboro pool, now with two producing wells, is treated the same.

Oklahoma City is restricted to 12½ per cent with the provision that additional demand for oil be given to Oklahoma City and no change made in other pools. Such extra demand having already been indicated by purchasers, the field goes on a 16 2/3 per cent basis April 3.

Other pools of the general Seminole area are curtailed by 30 per cent, as is the Lovell pool, Logan county.

The Sunday shutdown being practiced by several companies will not effect additional reduction over the figure set by the state.

Humble Posts Price For Refugio Crude

HOUSTON—On April 1 Humble Oil & Refining Co. made its initial posting of Refugio county crude in Gulf Coastal Texas fields. It posted below 25 gravity crude in this county at 75 cents and extended its Gulf Coast "B" grade price schedule for lighter grades of Refugio crude, adding new gravities up to maximum grade of 44 and above.

Humble's prices in Refugio county are:

Below 25	$0.75	34-34.9	1.20
25-25.9	0.93	35-35.9	1.23
26-26.9	0.96	36-36.9	1.26
27-27.9	0.99	37-37.9	1.29
28-28.9	1.02	38-38.9	1.32
29-29.9	1.05	39-39.9	1.34
30-30.9	1.08	40-40.9	1.36
31-31.9	1.11	41-41.9	1.38
32-32.9	1.14	42-42.9	1.40
33-33.9	1.17	43-43.9	1.42
		44 and above	1.44

On the same date it also added new light grades to its Gulf Coast "B" gravity schedule, up to maximum grade of 44 and above. Formerly Humble's maximum grade for these crudes had been 35 and above. The same schedule applies on these crudes as in Refugio county.

Humble also added the Humble field to its Gulf Coast postings. It posted Ector county crude in West Texas on the same price and gravity schedule as Winkler, Crane, Upton, and similar crudes.

Pettus crude in Bee county, south Texas, was posted by Humble for the first time on April 1 at $1.30 per barrel at the well.

Review of Late Production News

A DROP of 21,700 barrels in the country's daily average production occurred during the week ended March 29, which brought it down to 2,514,200 barrels, according to the American Petroleum Institute.

California and West Texas took the largest drops of the week, California falling off 18,400 barrels in daily average, and West Texas 12,000 barrels.

Santa Fe Spring decreased 17,400 barrels. Yates field in West Texas went down 12,100 barrels.

A gain of 9850 barrels in Oklahoma City field was balanced with decreases of 5750 barrels in East Earlsboro, 2400 barrels in Earlsboro, 4100 barrels in East Little River and 2250 barrels in Bowlegs. Searight gained 2250 barrels.

Gray county fell off 3200 barrels.

California

PRODUCTION of crude oil in California was estimated at 621,700 barrels for week ended March 29, a decrease of 21,600 barrels under the previous week's estimate.

Over 17,000 barrels of this decrease was contributed by Santa Fe Springs through enforcement of California's gas conservation law. Average production in this field had been reduced from 152,400 barrels for week ended March 22 to 135,000 barrels for week ended March 29.

State officials expect to have the recently granted restraining order in full force by the end of the coming week with the consequent additional reduction in daily output of approximately 25,000 barrels.

Production as of March 28 for this field was 130,000 barrels or 2320 barrels under the allowable set by the Fact Finding Committee for period March 16 to 31. Some operators are reported to be making little effort to comply with provisions of the restraining order and have indicated their intention of forcing the state to assume the responsibility of shutting down high gas-to-oil ratio wells.

Superior Judge Hazlett has set April 14 as date for reopening of the hearing on Santa Fe Springs. Small operators are asking that modifications of the existing injunction be made and have stated that they will appeal to a higher court following the failure of the court to adjust such inequities as are arising through enforcement of the law.

Oklahoma-Kansas

WITH the signing of the new proration order by the state corporation commission on March 27, Oklahoma will continue through the second quarter of the year on nearly the same basis as it has operated over the past two months. Its maximum production is set at 600,000 barrels daily with the provision that additional market demand for oil is to be given to the Oklahoma City pool, which has taken heavy punishment on proration thus far.

Current production in this country by pools is found on page 105.

Crude purchasers having signified that an additional demand is now here, Oklahoma City will be stepped up from its 12½ per cent allowed production to 16 2/3 per cent.

A wildcat strike in Barton county, Kans., opens another of the lime pools typical of this general area.

The Oklahoma City pool was extended one-half mile north by a big well. Development is entering the town-lot stage in this part of the field and some very close spacing of wells is being indulged in.

Texas, New Mexico, Louisiana

PRODUCTION found deeper in the Permian limestone than horizons previously yielding oil in Winkler county, West Texas, has proved a flash. Republic Production Co.'s A-4 Hendricks well, in the northeast corner of the east half of the southwest quarter of Sec. 45, block 26, produced 1520 barrels the first 24 hours after drilling to 2890 feet, but then quit flowing. Efforts will be made to pump it.

Reports of proposed extensions of pipe line laterals from the West Texas salt basin area into the New Mexico division of the Permian producing province are branded as premature. Humble Pipe Line Co. is surveying for a lateral from Winkler county to the Hobbs, New Mexico, district, but will delay construction. Present activity is described as merely to take care of formalities against the time in the future when line facilities will be necessary.

Magnolia Petroleum Co. has completed the largest well so far drilled in the Darst Creek field of the Luling fault zone, central south Texas. Its No. 1 M. E. Roamel, in the J. W. Robinson survey, flowed 782 barrels in a 32-minute test at 2322 feet.

Interesting operations in North Louisiana are confined to the Zwolle and Carterville districts of Sabine and Bossier parishes, respectively, where occasional wells make from 300 to 800 barrels, initial production. Weather conditions have impeded development progress in both areas.

Wyoming, Montana

PROSPECTS in the new border field, lying on the international line between Montana and Alberta, continue increasingly good. The Cosmos Petroleum Co.'s well drilled into the true producing sand at 2558 feet last week, and has a production estimated at 1000 to 2000 barrels of high grade oil, the largest completion to be made in northern Montana outside the Kevin-Sunburst field. The Monalta Oil Co.'s well is in the Sunburst sand, above the Vanalta which is the true producer in the field. It has 1100 feet of oil standing in the hole; this well extends the producing area of the field one mile to the east.

In Wyoming there is much activity in the newly-discovered extension to the old Osage field in the eastern part of the state. The discovery continues to hold up its 400-barrel production. In North Casper Creek field the All States Oil Co. has completed another 300-barrel well, making two such in this field which was abandoned by Midwest Refining Co. some years ago. The Midwest's deep test in the Salt Creek field is progressing through the Tensleep sand and has a fluid production of 2300 barrels, half of which is oil. The water was expected, however, and the company is gratified that it did not manifest itself until the bit was more than 200 feet in the sand.

January Daily Gasoline Demand Up 1,900,000 Gallons

NEW YORK, March 29

TEN per cent more gasoline was used in January this year than in January last year.

Consumption in 43 states in January, as reported by wholesalers and dealers under gasoline tax and inspection laws, totaled 668,990,000 gallons in January, compared with 610,711,000 gallons in January 1929, a gain of 58,379,000 gallons or 9.6 per cent, according to the American Petroleum Institute.

Daily average in January fell to 21,580,000 gallons from the daily average of 24,283,000 gallons in December.

Some large increases were reported by several states in gasoline consumption over the year. Wisconsin made the largest gain, with an increase of 43 per cent in January over January a year ago. Massachusetts gained 30 per cent.

The largest decrease was in North Dakota, which consumed 38 per cent less gasoline in January this year, than it consumed in January, 1929.

Among the states reporting, the largest gasoline consumer in point of gallonage was New York, with 91,977,000 gallons. Ohio was second with 62,162,000 gallons consumed in January this year.

Gasoline consumption figures in the 43 states are given in accompanying table.

January Gasoline Tax Report

(Figures in thousands of gallons)

	Jan., 1930	Jan., 1929	% change over Jan., 1929
Alabama	13,536	12,398	+ 9.18
Arizona	5,935	5,306	+11.85
Arkansas	10,921	10,706	+ 2.01
Colorado	9,964	9,850	+ 1.16
Connecticut	12,824	10,989	+16.70
Delaware	2,406	1,919	+25.38
District of Columbia	5,452	4,865	+12.07
Florida	22,012	20,522	+ 7.26
Georgia	17,423	15,705	+10.94
Idaho	2,577	2,214	+16.40
Indiana	27,670	23,740	+16.55
Iowa	23,980	20,420	+17.43
Kansas	21,732	19,919	+ 9.10
Kentucky	10,048	8,927	+12.56
Louisiana	13,993	12,239	+14.33
Maine	3,523	3,038	+15.96
Massachusetts	34,655	26,628	+30.14
Michigan	47,036	42,827	+ 9.83
Minnesota	22,131	18,969	+16.67
Mississippi	10,829	9,843	+10.02
Missouri	26,877	24,572	+ 9.38
Nebraska	15,545	15,134	+ 2.72
Nevada	929	941	— 1.27
New Hampshire	2,627	2,270	+15.73
New Jersey	32,638	28,316	+15.26
New Mexico	3,407	2,814	+21.07
North Carolina	21,240	22,682	— 6.36
North Dakota	3,047	4,908	—37.91
Ohio	62,162	55,433	+12.14
Oklahoma	20,154	22,559	—10.66
Oregon	7,089	8,894	—20.29
Rhode Island	5,081	4,003	+26.92
South Carolina	8,803	8,251	+ 6.69
South Dakota	7,662	6,737	+13.73
Tennessee	14,047	13,187	+ 6.52
Texas	53,588	53,994	— 0.75
Utah	3,706	3,110	+19.16
Vermont	1,793	1,618	+10.82
Virginia	14,374	12,456	+15.40
Washington	14,335	14,422	— 0.60
West Virginia	7,109	6,015	+18.19
Wisconsin	22,444	15,659	+43.32
Wyoming	1,686	1,612	+ 4.59
Total	668,990	610,611	+ 9.56
Daily average	21,580	19,697	+ 9.56
Increase over previous year:			
Amount of increase	58,379	.....	.....
Percentage increase in daily average	9.6%	.....	.....
New York	91,977	.....	+ 8.26

Father of Virginia Ethics Code Sells to Shell

RICHMOND, Va., March 31.—Two-thirds of the property of the Albemarle Oil & Gas Co., Charlottesville, Va., has been bought by the Shell Eastern Petroleum Products, Inc., New York. Purchase price was said to be $250,000. The Shell will take over the properties between April 1 and 5.

James B. Belk, who was the head and sole owner of the Albemarle company, has been one of the fighting members of the oil industry. He has harassed local politicians as well as major oil companies in an effort to help the cause of the small Independent jobber. One of his outstanding acts was to suggest, back in 1926, to Gov. Byrd of Virginia that the state enter the gasoline business by establishing a seaboard terminal and act as a source of supply for the Independent jobbers and local dealers who at that time were cut off from an Independent refinery source of supply and were forced to depend on the major companies for their supply.

Another far reaching movement that he started was the evolving of a marketing code of ethics for Virginia oil companies. which finally was approved with modifications by the Federal Trade Commission. The code subject was later taken up by the American Petroleum Institute, and the present code is the outgrowth of Mr. Belk's efforts in Virginia.

Mr. Belk also organized the Virginia Independent Oil Men's Association some years ago.

The deal by which the Shell company takes over the Albemarle company includes marketing properties in Albemarle, Orange and Buckingham counties of Virginia, including eight service stations and two bulk plants. Six of the service stations and one bulk plant are in Charlottesville, one service station at Orange, a service station and bulk plant each at Gordonsville and Dillwyn.

Mr. Belk retains one-third interest in the properties and will be retained, it is said, by the Shell for two years in an advisory capacity. He plans, however, to devote most of his time to other extensive real estate holdings in and outside of Charlottesville and to operate in a smaller way in the oil business. Much of his time will be spent at "Spring Dale," his country estate, which he is stocking with thoroughbred horses.

Johnson Wins Chicago Bridge Tournament

CHICAGO, March 29.—H. M. Johnson, Spencer Petroleum Co., won the annual bridge tournament of the Chicago Oil Men's Club, at the Auditorium hotel March 27. R. M. McNeily, Refiners Petroleum Co, came in a close second.

Other prize winners, in order, were C. J. Murphy, National Fuel Oil Co.; G. E. Phoenix, Industrial Petroleum Corp.; B. J. Majewski, Shaffer Oil & Refg. Co.; R. P. Baker, Pure Oil Co.; I. A. Archambault, Pennsylvania Oil Co. of Evanston; J. M. Carson, Lake Petroleum Co.

McCallian, Wilcox Tank Car Sales Head, Resigns

TULSA, March 29.—Charles McCallian, for the past year has been in charge of tank car sales for H. F. Wilcox Oil & Gas Co. has resigned, effective April 1, and will be associated with Ellis G. Slack, who operates a brokerage office in Tulsa. Prior to Mr. McCallian's connection with the Wilcox company he was with the LaSalle Petroleum Co. for several years.

Mr. McCallian will be succeeded at Wilcox by Roy R. Maines, formerly in charge of traffic for the company. Mr. Maines also was with the La Salle Petroleum Co. prior to becoming traffic manager of the Wilcox company about a year ago.

Wotowitch Honored By 7 O'Klockers

CLEVELAND, March 31.—R. A. Wotowitch of Henry L. Doherty & Co., president of the Seven O'Klockers Klub, was presented with a Telechron wall clock by members of the club recently.

The gift was in recognition of the steam he has put behind the organization of commuters between Philadelphia and New York which meets twice daily in its private, rolling club rooms. The organization now has 155 members. The private cars are equipped with a radio, library and other club facilities.

Oklahoma Farmers' Union Acquiring "Carry" Bulk Stations

By Lawrence E. Smith
N. P. N. STAFF WRITER

OKLAHOMA CITY, March 28

THE Farmers Union of Oklahoma, which has engaged in various kinds of selling to its membership, is now getting into the business of selling petroleum products to its members.

It is acquiring through purchase and lease bulk stations in western Oklahoma towns and expects, according to John E. Simpson, president of the Union, to have "one hundred or more bulk stations within three or four years," where members may come for their gasoline and oils at a saving over what they pay when the oil company delivers to their farms.

At the first two bulk stations acquired the Union began giving its members 4 cents off the prevailing retail price where purchases were in 50-gallon drums or more. Another inducement to the Union member is the fact that in Oklahoma he is excused from paying the 4-cent state tax where the gasoline is used for agricultural purposes, such as the operation of a tractor. Of course he gets the same exemption wherever he buys, but the fact of 8 cents off the retail price all at one time is a very potent inducement.

The prevailing tank wagon spread in Oklahoma is three cents. The farmer can get his gasoline delivered by the oil company at three cents under the retail price. Hence, at the two stations now operated by the Farmers' Union, the farmer saves one cent by coming to town for his gasoline. The Union gasoline sales will be on a strictly cash basis, Mr. Simpson said.

State Organization to Build And Operate Plants

The plan followed by the Union in Oklahoma differs from the cooperatives that have sprung up in a number of states. These were financed locally and there was usually present the element of stock promotion. All stations with which the Farmers' Union of Oklahoma will have connection will be under the direct wing of the Union and there will be no local financing, Mr. Simpson said. He said that he had recently paid dues to the national organization for 17,000 Oklahoma members and that rapid gains in membership were being made. Mr. Simpson was recently elected president of the state union for the 14th time.

The first two stations put into operation are at Willow and Carter, Okla. These are two small towns in the southwestern part of the state, about 12 miles apart. The bulk station at Willow was taken over March 1 and the one at Carter a few days earlier. The Union is leasing bulk plants at Elk City and Sayre from the Champlin Refining Co., Mr. Simpson said, is dealing for a plant at Mountain View and building one at Skeedee, which is in Pawnee county, and building one at Laverne in Harper county.

To Build More Plants As Quickly As Possible

Other plants will be acquired as rapidly as the Union can "get around to it," he said. Geographical location with respect to the strength of the Union and the character of farming will be factors that will determine all entries into new territory. As nobody except a Union member is eligible to the special price offered on quantity lots of gasoline, there would be no object in entering a town where the Union had but few or no members, except as it might be an inducement to the farmers to join the Union.

Mr. Simpson said that the Union would "stick to the tractor country" in acquiring or building plants. That would confine the activity to roughly the western half of the state, where wheat growing is the major agricultural activity. Not many tractors are found on farms on the east side of the state, where corn growing, dairying, fruit and truck gardening predominate.

Mr. Simpson said it was the purpose of the Union to disturb existing conditions as little as possible. The two bulk plants now in operation, for example, were supplied by the Anderson-Prichard Oil Corp. from its refinery at Cyril, Okla., and that arrangement continues. The plant at Willow was in turn supplying five retail outlets and this also continues.

The plant at Carter supplies three retail stations. These are not owned by the Union, which in this case acts as the jobber. Unlike many other cooperatives, no discounts from the retail price are provided for members at stations. The Union member gets the discount only by buying in barrels.

Mr. Simpson said the stations would be run on the same basis wherever they are located. To the delivered price of gasoline to the Union's bulk plant will be added the cost of handling which, in the small towns where purchase prices or rentals on sites are low, is not expected to amount to a great deal. The difference between this total price and the retail price is the discount to the farmer. He expected it would average about four cents at present filling station prices in western Oklahoma, and this is the amount now deducted at the two plants in operation. Oils and greases will be handled at the plants and some discount to members will be given. Mr. Simpson was not prepared to say just what that saving would amount to.

Kerosene will also be sold, but, aside from the amount purchased by members for lighting and cooking, it will not be important. At the price the members can buy gasoline they will prefer it for tractor operation, it is expected.

The exemption from payment of gasoline tax is, in Oklahoma, confined by law to "motor fuel . . . used only for the purpose of operating farm tractors or stationary engines owned and operated by the purchaser of such motor fuel and used exclusively for agricultural purposes." The law became effective last October.

Get Tax Exemption When Gasoline Is Bought

When the legislature increased the gasoline tax last year it provided for the form of granting exemption now used. The farmer, in claiming exemption, makes affidavit that the motor fuel on which exemption is claimed is to be used according to the law. He sets forth on the affidavit the number of gallons purchased, the motor numbers of his tractors and stationary engines and their license numbers and the date the motor fuel was purchased.

He swears that none of the gasoline was used in automobiles, trucks or motor driven vehicles on the highways. The dealer, who in Oklahoma is the tax collector, sends in all the affidavits to the state auditor and

that is the end of that transaction.

Within the meaning of the act, the attorney general has held that it is not legal to use tax-exempt gasoline for operating stationary engines in cotton gins and according to the language of the statute, it would be illegal for a farmer to take his tractor across the fence to thresh for a neighbor, if he did not pay tax upon the gasoline used.

Some very fine distinctions could be drawn, but the state is not too critical. H. V. Bird, gasoline tax auditor at the state capitol, says it is the understanding of the state that all farmers are quite honest and that nobody would think of using tax free gasoline in his automobile. Hence, the state never goes behind the affidavits turned in.

That a considerable volume of gasoline will be handled by the Farmers' Union there is no doubt. Mr. Bird estimates that there are 20,000 tractors on the farms of Oklahoma. For each tractor there is at least one automobile.

So far as is known this is the first time a Farmers' Union has gone into the oil business directly. The venture is of more than passing interest. The Union is quite active in Oklahoma, sponsoring cooperative stores managed by Union locals, in which everything from tires to cream separators are sold, managing and promoting cooperative mills and elevators and cotton gins. It is in the oil business in another way, pooling royalty interests on a plan modeled after the one adopted by Congress on lands of the Osage Indians.

New Retail Gasoline Price War Breaks Out on West Coast

LOS ANGELES, March 28

PRICE cutting activities among a number of independent refiners in the Los Angeles Basin has precipitated the local oil industry into another gasoline war that threatens to result in the extermination of the small operators.

Because of large commercial accounts held by the major companies based upon the tank wagon price, posted figures have not been changed although actual delivery prices in tank wagon lots have been reduced.

These reductions have varied among the marketing companies during the past few weeks, but at the close of the week ended March 29 the prevailing actual tank wagon delivery price in Southern California was 12.50 cents or 7 cents under the total posted tank wagon price of 19.50 cents in the same territory. These figures include the 3 cent state tax.

Delivery prior to the present fluctuation had been made at a so-called contract price of 15.50 cents in the Los Angeles Basin area and the standard service station price has been the same as the total tank wagon quotations or 19.50 cents.

Major company gasolines retailed at many points in Southern California during the past week at from 15 to 16.50 cents and in a few scattered districts for as low as 13.50 cents. By operating on a 1-cent margin one reseller reported daily sales amounting to 10,000 gallons while other dealers displaying signs advertising gasoline for sale at 15 cents failed to keep out of the red.

The big chain retailers, who made a persistent effort to prevent a reduction in the service station price and who as a result have been forced to watch their gallonage disappear to practically nothing, have been enabled through the reduction in the delivery price of motor fuel to meet the "bootleg" prices and the present war threatens to be a battle to the finish.

The entrance of independent companies into the marketing territory of California companies in Oregon and Washington has caused a reduction in the service station price in those areas nearly as drastic as in the Los Angeles Basin district. Gasoline has been reported to have sold for as low as 15 and 16 cents per gallon in the northwestern part of the United States and the major companies with by far the larger share of total gallonage sales in these areas have been forced to bear the brunt of the price-cutting.

N. Carolina Jobbers Test Chain Store Bill

GREENSBORO, N. C., March 31.—Very little sentiment for or against chain store propaganda as against home owned companies was expressed by North Carolina oil jobbers at the annual meeting in Greensboro on March 28 of the North Carolina Independent Oil Jobbers Association, according to L. H. Martin, president of L. H. Martin, Inc., here, and secretary-treasurer of the association. Mr. Martin was re-elected to this post at the meeting.

Other officers elected to serve during the year are: E. R. Burt, Biscoe Oil Co., Biscoe, president; J. P. Flanigan, Statesville Oil Co., Statesville, vice president; and R. L. Brinson, Southern Oil Co., High Point.

Directors elected include, besides the above named officers, O. A. Costner, C. K. Boren and W. N. Holt.

North Carolina jobbers, Mr. Martin says, are at present testing the validity of a state law which places a tax of $50 on chain stores which have more than five units in the state.

On Page 77 of this issue appears the first part of an article describing the new Ohio river terminal and bulk plant of the Pure Oil Co. at Cincinnati. Part of the press run of this issue showed the article as being Part 2. The error was caught later. Part 1 is published this week and Part 2 will appear in the issue of April 9.

Robert E. Doyle Dies

PROVIDENCE, R. I.—Robert E. Doyle, 52 years old, for seven years a salesman for the Pennsylvania Petroleum Products Co. of Providence, died recently of heart disease in Providence. Before entering the employ of the Pennsylvania company, Mr. Doyle was office manager of the Providence offices of the Gulf Refining Co. Mr. Doyle was known to the oil trade throughout New England.

ST. LOUIS—A heart attack caused the sudden death of William G. Kuehnel, sales engineer of the Curtis Pneumatic Machinery Co. here on March 23. Mr. Kuehnel had been with the company for the past 15 years and was well known among oil marketers and equipment manufacturers in the territories surrounding Milwaukee, Chicago, Cincinnati and Louisville.

Funeral was on March 26 in St. Louis, according to L. C. Blake, advertising manager.

NEW YORK, March 27.—H. J. Hall, Jr., vice president of J. E. Gerrodette & Co., Inc., refinery representatives here, died March 24 at Midwood hospital, Brooklyn, N. Y., according to J. E. Gerrodette, president.

Mr. Hall was previously for about 25 years, vice president and general manager of the New York Lubricating Oil Co.

New Coastal Oil Terminal

HOUSTON, March 29.—Humphreys Corp., principal developers of deep flank production on the Barbers Hill salt dome, in Chambers county, Gulf Coastal Texas, announce immediate construction of a $300,000 crude shipping terminal at Lynchburg on the Houston ship channel. A 14-mile pipe line will connect the Barbers Hill properties with wharfage facilities. Construction Service Co. has contract for the work.

Mid-Continent Refiners Reduce Gasoline Stocks to Last Year's Level

By J. C. Chatfield
N. P. N. STAFF WRITER

IN RECENT weeks gasoline markets in the Mid-Continent field have shown marked improvement as a direct result of the conservative rate of operations maintained by refiners in that area. The current statistical position of Mid-Continent refiners is as satisfactory as that of any other group in the country and far better than that of most groups.

While current demand for gasoline at Mid-Continent refineries is running far above that enjoyed a year ago, refiners have not increased their crude runs comparably. As a result stocks of finished motor fuels in the field as a whole have been cut into steadily and now are only slightly above those of a year ago.

The improved condition of the refining industry in the Mid-Continent is clearly shown by the weekly reports published in NATIONAL PETROLEUM NEWS covering the operations of 93 plants with a rated still capacity of 521,300 barrels per day. These reports cover approximately 60 per cent of the operating capacity of the inland Southwestern refining centers.

On Jan. 3 the 93 reporting plants had on hand 130,503,000 gallons of gasoline, as compared with 89,845,000 gallons on Jan. 4, 1929. The increase in storage thus was 45.3 per cent.

In Kansas 12 reporting plants held in storage 23,464,000 gallons of gasoline as compared with 16,049,000 gallons the previous year, an increase of 46.2 per cent. The 29 Oklahoma plants reporting showed an even larger increase, from 41,099,000 gallons on Jan. 4. 1929 to 62,372,000 gallons on Jan. 3 this year, an increase of 51.8 per cent.

North Texas refiners operating 25 plants reported 18,642,000 gallons on hand Jan. 4, 1929, and 20,832,000 gallons on the corresponding date this year, an increase of only 11.7 per cent. West Texas figures are not entirely comparable, this year with last. This publication began showing operations of West Texas plants at the beginning of 1929 with 10 plants having a capacity of 59,500 barrels reporting. Later new plants were built and placed in operation and the reporting group was increased to 15 with a capacity of 81,500 barrels per day.

The 10 reporting plants on Jan. 4, 1929 reported a storage of 7,067,000 gallons of gasoline. This year 15 reporting plants showed a gasoline reserve of 12,516,000 gallons, an increase of 77.1 per cent.

In inland Louisiana and Arkansas 12 plants held only 6,988,000 gallons of gasoline in their tanks a year ago while this year the reserve had been increased to 11,319,000 gallons an increase of 62.0 per cent.

As the year has progressed refiners have kept their crude runs so low that there has been only a minor increase in gasoline output. As a result stocks of all reporting plants increased only 17,390,000 gallons during the first 12 weeks of the year, the period when the largest accumulation normally takes place. In the first 12 weeks of 1929, for example, gasoline stocks increased 50,607,000 gallons, almost three times as much as this year.

The 93 reporting plants showed total gasoline stocks March 21 of 147,893,000 gallons as compared with 140,452,000 gallons on March 22, 1929. The increase in stocks thus is only 5.3 per cent.

The 12 Kansas refiners reporting to this publication actually have brought their gasoline stocks down 11 per cent below the 1929 level. Last year on March 22 the Kansas plants had 31,172,000 gallons on hand. On March 21 this year the stocks were down to 27,476,000 gallons.

Oklahoma reporting plants held 72,342,000 gallons last year and 72,453,000 gallons on March 21 this year, a negligible increase. In north Texas also the increase was small from 21,536,000 gallons last year to 22,978,000 gallons a week ago.

West Texas and Inland Louisiana and Arkansas plants show the largest stock increases. West Texas stocks on March 21 were 10,955,000 gallons as compared with 7,203,000 gallons a year ago, an increase of 52.1 per cent. North Louisiana and Arkansas stocks March 21 were 13,761,000 gallons as compared with 8,199,000 gallons a year ago, an increase of 67.9 per cent.

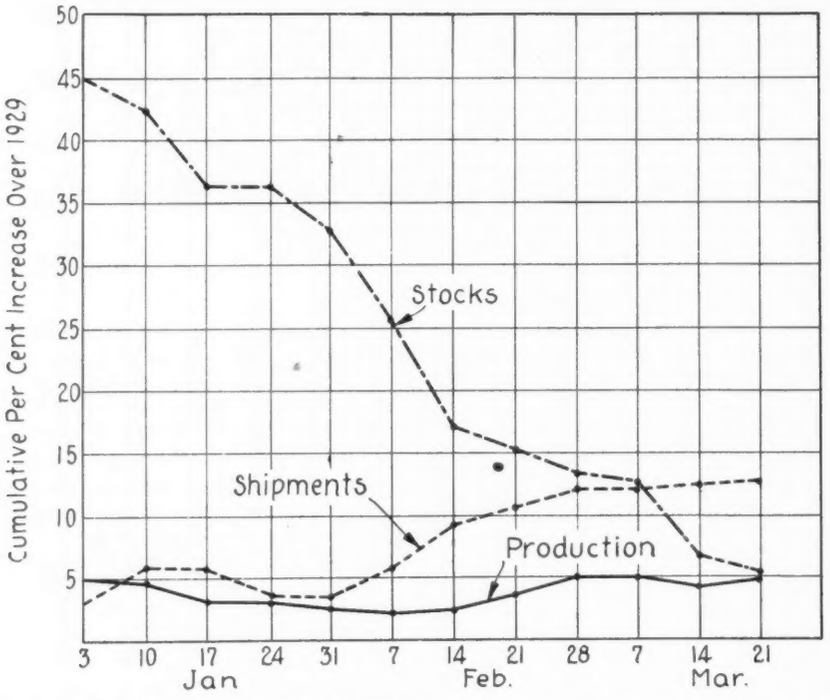
In Oklahoma and Kansas shipments of gasoline have shown the most remarkable increase in recent weeks as weather conditions have improved. Total shipments from Kansas plants in the first 12 weeks exceed those of

Accumulative 1930 Gasoline Statistics of 93 Mid-Continent Refineries

1930 PERCENTAGE INCREASE OVER CORRESPONDING ACCUMULATIVE 1929

Week Ended	Kansas	Oklahoma	North Central Texas	West Texas	North Louisiana Arkansas	Total
Production—						
Jan. 3	* 1.8%	9.9%	22.9%	24.4%	*24.3%	5.1%
Jan. 10	* 3.0	6.0	28.0	23.0	*19.5	4.9
Jan. 17	* 2.2	0.2	26.3	33.3	*15.9	3.6
Jan. 24	1.1	* 2.1	23.5	32.3	*15.4	3.3
Jan. 31	0.6	* 2.9	20.9	29.0	*11.2	2.8
Feb. 7	* 1.2	* 4.2	19.3	26.7	*11.1	1.6
Feb. 14	* 0.3	* 3.2	18.9	25.1	*10.7	2.2
Feb. 21	1.6	* 2.2	20.6	25.9	* 9.6	3.6
Feb. 28	4.1	0.04	20.5	22.6	* 7.5	5.1
Mar. 7	5.2	0.01	19.4	21.1	* 7.0	5.1
Mar. 14	5.1	0.1	17.0	18.4	* 7.4	4.4
Mar. 21	7.2	0.6	16.7	17.1	* 8.3	4.9
Shipments—						
Jan. 3	1.5%	* 2.7%	49.3%	49.1%	*36.1%	3.1%
Jan. 10	1.1	3.0	39.3	37.5	*28.3	5.8
Jan. 17	8.1	1.1	29.7	21.4	*19.6	5.8
Jan. 24	4.9	* 1.8	27.9	11.0	*17.1	3.5
Jan. 31	7.5	* 0.4	24.6	10.6	*20.3	3.5
Feb. 7	6.4	3.3	23.6	18.1	*18.3	5.5
Feb. 14	9.8	8.0	23.0	19.1	*12.5	9.0
Feb. 21	12.9	11.8	19.8	16.7	*11.2	10.4
Feb. 28	17.5	13.5	21.8	6.7	* 7.0	12.1
Mar. 7	18.9	12.5	20.0	3.2	* 5.0	11.7
Mar. 14	20.4	12.4	17.1	19.2	* 8.7	12.3
Mar. 21	20.0	12.6	20.0	19.5	*11.7	12.3
Stocks at Close—						
Jan. 3	46.2%	51.8%	11.7%	77.1%	62.0%	45.3%
Jan. 10	42.1	47.7	13.4	81.1	54.3	42.3
Jan. 17	26.2	40.7	16.9	77.9	44.7	36.3
Jan. 24	31.1	37.7	15.0	110.3	36.9	36.2
Jan. 31	21.7	31.2	14.2	123.6	67.8	33.6
Feb. 7	16.3	21.3	11.9	112.9	64.0	25.7
Feb. 14	8.3	13.4	11.0	93.1	35.4	17.5
Feb. 21	3.5	6.4	21.8	113.9	39.8	15.4
Feb. 28	* 2.9	5.3	16.7	145.3	27.6	13.3
Mar. 7	* 6.6	4.2	18.2	166.9	17.5	12.3
Mar. 14	*14.1	1.8	18.8	65.2	41.7	6.4
Mar. 21	*11.0	0.2	6.7	52.1	67.9	5.3

*Percentage decrease.



Cumulative per cent increase in gasoline production, shipments and stocks at 93 Mid-Continent refineries for first 12 weeks of 1930 over same period in 1929 illustrating how low production rate has cut into stock increase

last year by 20 per cent. The increase mostly has come since the middle of February.

In early weeks of the year shipments from Oklahoma plants were below those of last year. The increase began during the first week of February and built up gradually until at the end of 12 weeks the increase was 12.6 per cent.

North Texas Refiners enjoyed a substantial export business during the first three months with the result that its increase in business was somewhat greater in January than later. For the 12 weeks the total increase was 20 per cent. In West Texas the increase in 12 weeks was 19.5 per cent.

Inland Louisiana and Arkansas refiners showed a substantial loss in shipments early in the year. Lately there has been some increase. For the 12 weeks total shipments were 11.7 per cent lower than last year.

In the March 25 bulletin of the Western Petroleum Refiners Association a table was published showing cumulative percentage changes in production, shipments and stocks of gasoline by districts for the first 12 weeks of the year compared with those of 1929. The table is reproduced herewith and a chart has been prepared showing the course of changes this year for the Mid-Continent as a whole.

U. S. Bureau Reports 8.2% Gain In Motor Vehicles in 1929

CLEVELAND, March 31

UNITED STATES BUREAU OF PUBLIC ROADS has just announced the 1929 registration of motor vehicles in the United States as 26,501,443. This is a gain of 2,008,319 vehicles or 8.2 per cent over the 1928 registration.

The Bureau of Public Roads registration total is slightly less than the registrations figures compiled by private agencies earlier in the year and probably eliminates duplications that might have appeared in the early figures.

New York retains the lead with a total of 2,263,259 vehicles but this total includes those cars that were registered early in the year and junked during the year. Under New York's present registration law the license plate remains with the car. In most states the license remains with one owner and may be transferred from car to car. New York recently adopted the latter method of registration but the law does not go into effect until 1931.

California is second. Others of the first 10 are in order: Ohio, Pennsylvania, Illinois, Michigan, Texas, Indiana, New Jersey, and Massachusetts. All but the last three had registrations in excess of 1,000,000.

Registration fees amounted to $347,443,543 last year, a gain of $25,213,518 over the fees paid by motor vehicle owners in 1928. The split of the fees, according to the bureau's compilation was as follows: collection and miscellaneous purposes $24,505,737 and highway purposes $323,337,806. The latter was subdivided as follows: state highway funds $223,292,969; local funds $66,861,364, and state and county bond funds $33,183,473.

With an estimated $350,000,000 derived from gasoline taxes in 1929, close to $700,000,000 was available for road building and maintenance purposes.

The 1929 registrations by states follows:

State	Motor Vehicles	Registration Fees
Alabama	285,533	$3,736,380
Arizona	109,013	748,565
Arkansas	233,128	4,212,161
California	1,974,341	10,489,068
Colorado	303,489	1,835,386
Connecticut	328,063	7,992,755
Delaware	54,960	1,023,440
Florida	345,977	4,959,129
Georgia	358,905	4,568,209
Idaho	118,074	1,787,467
Illinois	1,615,088	17,087,209
Indiana	866,715	6,253,424
Iowa	784,450	11,919,350
Kansas	581,223	5,697,306
Kentucky	332,848	5,381,302
Louisiana	280,868	4,523,634
Maine	184,506	3,030,128
Maryland	319,873	3,295,314
Massachusetts	817,704	7,117,725
Michigan	1,395,102	23,212,316
Minnesota	730,399	10,846,826
Mississippi	250,011	2,963,381
Missouri	756,680	9,690,727
Montana	140,387	1,549,487
Nebraska	418,226	4,289,969
Nevada	31,915	296,881
New Hampshire	108,880	2,248,213
New Jersey	832,332	14,803,016
New Mexico	78,374	756,763
New York	2,263,250	38,293,313
North Carolina	483,602	7,045,116
North Dakota	188,046	1,989,475
Ohio	1,766,614	12,860,453
Oklahoma	570,791	6,964,360
Oregon	269,007	7,644,226
Pennsylvania	1,733,283	29,264,695
Rhode Island	134,009	2,403,809
South Carolina	231,274	2,674,379
South Dakota	204,199	3,150,657
Tennessee	362,431	4,288,420
Texas	1,348,107	20,418,696
Utah	112,661	838,300
Vermont	93,030	2,339,782
Virginia	387,205	6,145,296
Washington	442,341	7,547,382
West Virginia	268,888	4,565,836
Wisconsin	793,502	11,780,703
Wyoming	60,680	647,200
District of Columbia	151,450	665,914
Total	26,501,443	$347,443,543

More Autos Made in February

CLEVELAND, March 29.—Production of passenger cars in the United States in February was 275,811, trucks 47,129, and taxicabs 1022, a total of 323,962. In January a total of 273,170 vehicles were produced and in February, 1929, 466,418.

ST. LOUIS— The Sunshine Oil Co. has moved into its new plant here on Easton Ave. Storage facilities have been increased at this plant and the company now handles a complete line of petroleum products. J. E. Silberman is president.

Refinery Saves $200,000 Yearly With Systematic Reclamation Plan

By John Power
N. P. N. STAFF WRITER

TULSA, March

TWO hundred thousand dollars a year saved around a refinery is an item worth entering on anybody's books. That is the savings on material, that would otherwise have to be written off as junk, credited in 1929 to the reclamation department of the Mid-Continent Petroleum Corp. at its West Tulsa plant. The figure is not far from being the average savings which the department has effected since its inception several years ago.

Everything that has been used once, and has been replaced, from wiping-rags to steel valves and fittings, passes through the reclamation department which is in charge of B. H. Davis.

Even when the time clocks in the department's buildings were discarded because they "wouldn't run," the reclamation department passed its sympathetic hands over their innards, and now they tick merrily, unimpeachable witnesses to the versatility of the department.

The gathering and reconditioning of used material is not a haphazard affair, as practiced by the Mid-Continent. Some 40 boxes are distributed around the plant into which the pipe fitters throw all used connections, pipe, etc.

In addition there are about 25 large cans, made from old oil drums, at convenient points into which all oily rags used for wiping engines, valves, etc. are put.

A truck, operated by the reclamation department, makes the rounds of these boxes and rag-cans and brings to the reclamation department all the material which it has picked up.

Material coming to the reclamation department is sorted first according to type, condition, and the kind of metal. Steel fittings are separated from cast iron, brasses of all kinds are segregated, material evidently too far gone to be saved is put to one side. Everything is gone over as it comes in, inspected, and few indeed are the reclaimable parts which get into the bins set apart for the various types of junk.

Valves and fittings of all kinds shown by a hasty examination to be redeemable are put through an Oakite bath to clean them of the grease and dirt. The Oakite bath is in two cauldrons, with racks supported on uprights along the sides from which the fittings are suspended by hooks. The solution of Oakite runs about eight ounces to the gallon of water, a ratio which has been found sufficiently strong to remove the grease and dirt quickly.

From the bathtub, the fittings continue their journey into service by way of a work bench. At this bench a man takes them apart, inspects them, and cleans them thoroughly with a wire brush. Threaded ends are cleaned by means of electrically operated brushes. Valves with ground seats are sent to the other end of the building, where another workman grinds the seats, and finishes putting the valve in first class shape.

Tees, ells, and similar fittings are taken from the bath, and the threads cleaned on the mechanical brushes. They are then sorted according to type, and size, and sent back to the warehouse.

At one end of the reclamation building steam connections are provided where valves may be tested after being repaired. Pressures up to 2000 pounds are available. The Mid-Continent does not use reclaimed material on any of its high pressure, or high temperature work, as the danger of a failure is considered too great.

When a new valve enters the warehouse it is tagged with a serial number. When this fitting reaches the reclamation department this number is changed, the serial then given it indicating that it has been used. A card index system, kept by Mr. Davis, superintendent of the department, shows every valve that the department handles, where it came from, and where it goes.

Bolts and nuts that come to the department are cleaned in the cauldrons, inspected, and, when necessary, the threads are re-chased. Although the department has a bolt machine, capable of threading the bolts, it is deemed uneconomical to do this much repair work on such a relatively small item.

Pipe nipples which find their way to be reclaimed are cleaned, straightened, and re-threaded when necessary. The straightening is done in a home-made device. The nipple is placed on two uprights, or standards, and a heavy

Members of the reclamation department, Mid-Continent Petroleum Corp. From left to right, Jess Williams, John Wilkinson, Charles Shedrick, Andy Parmlee, Jack Torbett, Truman Burton, Floyd Thrasher, Will Jackson, Jim Hughes, and B. H. Davis, superintendent of the department

Valves of all sizes and descriptions awaiting their "Saturday night" bath in the cauldron of Oakite solution used to clean them of grease, dirt, and scale

weight is dropped on the bend. The weight is handled by means of a line attached to it, and running up through a pulley overhead through the wall into the building, to a cat-head operated on a shaft which runs one of the electrically driven wire brushes.

All things that come to the reclamation department are not metal. About 3000 pounds of wiping rags each month are cleaned and returned to service. These rags are gathered from the cans previously described, and brought to that part of the department known as the laundry.

There they are first put into a centrifugal type washing machine, along with a little water. The centrifugal motion whips out the grease and oil, which drains off from the machine. Then they are put into a paddle type washing machine, along with some ordinary washing compound such as is used in laundries, hence into the centrifugal machine, where the greater part of the water is whipped out.

One more process, and the rags are ready to be put back into service. After being dried partially during their second trip to the centrifugal machine, the rags are placed in the steam drier. This consists of a series of wire trays spread over steam coils.

Material too old, or in too bad condition to warrant salvaging, is sorted as to whether it is made of iron, or steel; whether it is a casting, a forging, or whatever its manufacturing processes may have been. It is then sold in car load lots.

About $1500 a month is realized from the sale of junk, which is credited to the reclamation department. This item is handled by this method rather than on open account, as all material received by the reclamation department has been charged off the books of the company. The department is credited with the new, or replacement cost, of the articles it is able to put back into service.

Almost everything portable around the refinery that has to be replaced is grist for the mill of the reclamation department. A glance at the departmental records for the past year shows that the plant plays few favorites in its reclamation work. The accompanying table lists the items handled by the department, the quantity, and their replacement value.

Items Handled by Reclamation Department

Items	Quantity		Value
Brass	26,800	pounds	$2,144.00
Bolts-machine	28,960	pounds	1,246.87
Bushings	452	pounds	112.50
Bends	88	pounds	123.08
Crosses	17	pounds	11.75
Elbows	4,089	pounds	4,216.43
Flanges	2,997	pounds	4,170.10
Goggles	109	pounds	138.35
Gaskets	127	pounds	349.75
Iron and steel	19,008	feet	6,159.34
Joints—expansion	39	feet	903.08
Lumber	447,869	feet	8,957.38
Meters	6	feet	680.00
Nipples	922	feet	443.79
Pipe	51,066	feet	17,602.36
Pipe coupling	1,443	feet	2,020.55
Pipe caps	210	feet	42.17
Pipe plugs	798	feet	442.34
Pipe clamps	213	feet	196.00
Pipe saddles	20	feet	56.40
Reducers	273	feet	48.32
Rags	36,953	feet	2,205.69
Tees	1,372	feet	4,973.75
Unions	568	feet	815.37
Valves—Standard	693	feet	6,462.35
Valves—globe	2,376	feet	13,694.33
Valves—std. flange	1,160	feet	34,842.96
Valves—steel	658	feet	82,769.49
Valves—aterite	93	feet	9,768.13
Valves—vacuum	5	feet	132.42
			$205,728.05
Junk sales			10,548.27
Total revenue			$216,276.32
Operating expense			20,692.08
Net savings			$195,584.24

The men who work in the reclamation department are proud of their jobs, and the work they do. Most of them have worked for the Mid-Continent for years, and have come to realize that a lot of small savings put together will soon make an imposing total.

The department numbers ten men, on the average. They are the superintendent of the department, Mr. Davis; one valve repair man, one fitting man, one laundryman. Three men work outside the plant at breaking out and sorting connections, etc. All members are looking forward to the new quarters which are being planned to house the department. The new buildings are to be erected some time next fall, it is said.

Hydrogenation Process Stock Offered

CLEVELAND, April 1.—Refiners who become licensees of the hydrogenation process will be allowed to have a financial interest in the company owning American rights to the process according to an announcement by the Standard Oil Co. of New Jersey. To permit this a new company is being organized which will acquire American rights from the Standard I. G. Co. which now owns rights outside of Germany.

The Standard has invited refiners in the U. S. which it believes can make use of the process, to subscribe to stock. Stockholders may acquire licenses and will pay a royalty to the new company which in turn will pay a royalty to the Standard I. G. which is a wholly owned subsidiary of the Standard of New Jersey and the I. G. Farbenindustrie of Germany.

The first commercial installation of the process will be completed at the New Jersey company's Bayway plant about May 1. Other plants are building at Baton Rouge and Baytown.

White Star Builds New Cracking Unit

CLEVELAND, April 1.—The White Star Refining Co. is enlarging its cracking capacity at its new refinery at Detroit. The new Dubbs unit is being added to the present battery. In addition each of the two units installed last year is being equipped with a second reaction chamber so that the units can be operated under the flashing plan or running to coke.

Arthur G. McKee & Co. of Cleveland, is handling the new construction work for the White Star. The Detroit plant was put in operation in July, 1929. It has a crude capacity of 6000 barrels per day.

Three Texas Areas Giving Promise Of Steadily Increasing Yields

By Paul Wagner
N. P. N. STAFF WRITER

HOUSTON, March 28

PRODUCTION increases in Texas, which operators have been able to only partially curb, promise to continue from the Panhandle region, the Ector county area of the Permian salt basin and the Van district of Van Zandt county, East Texas.

Although a measure of control against great increases in production exists in the "hot spot" areas, operators are generally agreed that little may be expected in the way of reductions; the best that can be accomplished will be to hold exploitations at low ratios in comparison with constantly increasing potential production figures.

Based on the 122 active operations in the Panhandle, and the favorable producing character of most of the locations, it was estimated at last week's proration meeting in Amarillo that the region would be capable of producing 150,000 barrels by May 1. Present production is fluctuating at levels just below 95,000 barrels from approximately 1740 wells in six counties.

Gray county, where most of the Panhandle work is under way, is producing approximately 60,000 barrels of the regional total daily.

Producing wells in Gray county now total 525 and the number of tests drilling approximates 72. Hutchinson county, with 960 wells producing approximately 23,500 barrels daily, has 31 tests drilling. Carson county, with 9350 barrels daily production from nearly 200 wells, has 26 tests drilling.

Such small progress was made at the Amarillo proration meeting that the Railroad Commission of Texas, which administers the state's conservation laws, will hold a later hearing at Austin when the field situation becomes more pressing.

Major companies opposing Panhandle proration, in addition to many smaller operating units, were the Gulf Production Co. and the Magnolia Petroleum Co. In the case of both companies their Panhandle production, served by their own pipe lines, is less than 7000 barrels daily.

In the Greater Wichita Falls district, where The Texas Co. recently abandoned its Wilbarger county policy of prorating pipe line runs, the Sinclair Crude Oil Purchasing Co. has followed suit. Effective March 22, the Sinclair company began taking 100 per cent of the oil and paying for it on the usual purchasing plan. At the beginning of the year, it began buying 50 per cent and storing 50 per cent of the Wilbarger oil run. On March 8, the storage of oil was discontinued and only 50 per cent run from lease connections. The Texas Co. reverted to 100 per cent takings March 6.

Late in the present week, the Humble Oil & Refining Co. continued buying 50 per cent and storing 50 per cent of the oil run from its Wilbarger connections.

In the Judkins area of Ector county, West Texas Permian salt basin, where 31 tests are now drilling, spring may find some form of prorating practice necessary.

Landreth Production Co., and a partnership composed of Robert R. Penn, the Humble Oil & Refining Co., and the Atlantic Oil Producing Co., are the principal other operators at present active in the Judkins area. Gulf Production Co. has five locations or drilling wells and the Skelly Oil Co. two operations under way.

Because of University of Texas leasing board requirements on acreage held by the Cosden and Landreth companies they are being forced to drill many locations, which in turn force operations by other interests.

Present pinched production of five Judkins field wells amounts to less than 5000 barrels daily, although they are capable of yielding double that quantity of crude.

REPORTS of plans for pipe line extensions northerly out of Winkler county into the Hobbs area of Lea county, New Mexico, are discredited for the present. Humble Oil & Refining Co., which owns the best well completed in the Hobbs district, has been able to keep it shut in by virtue of its location on a federal permit and the government's conservation position.

The Humble will not for the present extend its subsidiary pipe line system to the Hobbs area, preferring to continue keeping the well shut in, but is going ahead with a pipe line survey against the time when construction is desirable. Certain formalities requiring about 90 days time to complete would be required when an extension became desirable and it is to take care of that situation that the survey is now being made.

Rumors of entry into the Hobbs area, via the Andrews county, Texas, district, by the Atlantic Pipe Line Co., are described as premature; also a similar extension of gathering facilities by the Shell Petroleum Corp. These extensions, however, may be eventually expected to be made.

In the cooperatively developed Van field of East Texas, where an even dozen wells are now productive, nine new locations announced this week will bring active operations to 22. Because of leasehold requirements falling due within the next 15 months it will be necessary to drill at least one well for every fee owner in the field and this will call for a total of more than 100 tests.

VAN production, although potentially in excess of 40,000 barrels daily, is being exploited at approximately 10,000 barrels, or less. All wells in the field are pinched.

Water found in the Pure Oil Co.'s No. 1 Crim test, 4000 feet northwest of the Jarman discovery well of last fall, has delimited the field's extension in that direction. The Crim cored six inches of white water sand at 3090 feet and 200 feet of brine rose in the hole. The well is being plugged back to 3037 feet, where it produced 117 barrels daily, March 17.

The plunge of the Van structure is indicated by comparison of the Crim with the No. 2 Tunnel, on Shell Petroleum Corp. acreage, the higher producing well in the field. The vertical distance from the top of the Woodbine horizon in the Tunnell to the water in the Crim is 675 feet, measurements adjusted to surface elevations.

Construction work on a 190-mile pipe line from the field to the Smiths Bluff refinery of the Pure Oil Co., in the Port Arthur district, will follow the recently announced $20,000,000 pipe line bond issue floated by the Pure in New York. The line is to be of 10-inch welded construction.

No confirmation is possible in South Texas of a reported proposal of the Cities Service Oil Co., to construct a 512-mile pipe line from the Oklahoma City territory to the Gulf Coast. In connection with the report it is said the Cities Service interests are considering a 20,000 barrel daily capacity refinery in the Houston district.

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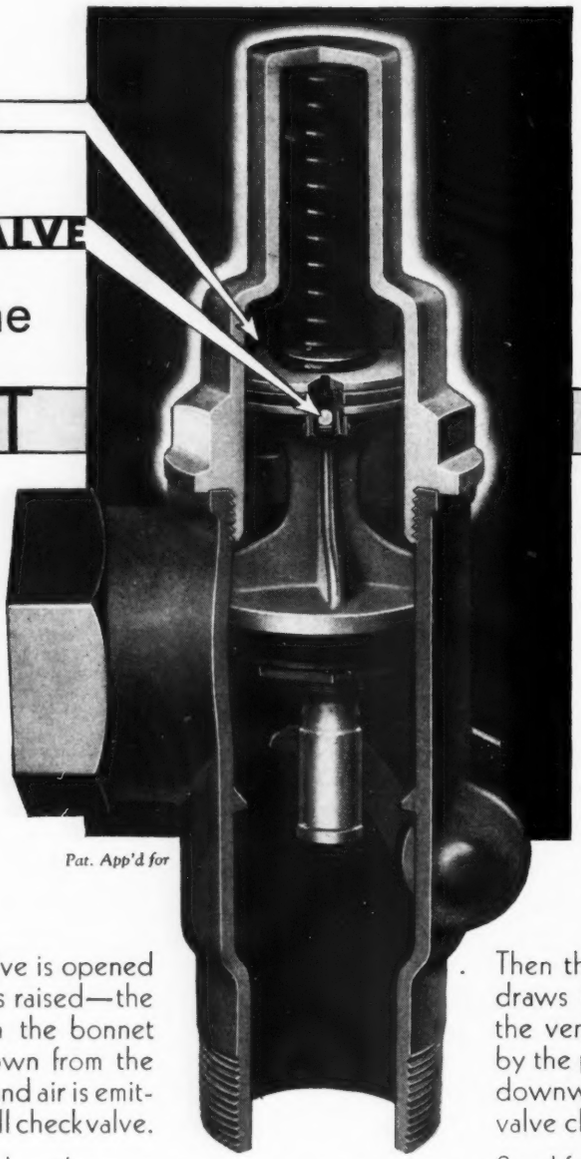

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World's Deepest Producers, in Big Lake, Stir Texas Wildcatters

By Paul Wagner
N. P. N. STAFF WRITER

HOUSTON, March 27

TESTING of various West Texas areas for deep Pennsylvanian oil will eventually follow the development of the 8500-foot producing horizon of the Big Lake field in Reagan county.

Already, there are a half dozen wells in the Big Lake field that are either yielding high gravity crude at a record depth for commercial production, or have made oil shows in their incompleted stages.

Until recently the deepest producing well in the world was the B-1 University of the Texon-Group 1 Companies, now controlled by Continental Oil Co., which, at 8520 feet, began making 150 barrels daily, Dec. 1, 1928. The well was afterwards deepened five feet and gradually increased its production until recently it was more than 2900 barrels daily of 57 A.P.I. gravity crude.

A few weeks ago, the Big Lake Oil Co.'s C-3 University test, a quarter of a mile away, in Sec. 1, Block 2, produced 36 barrels in six hours at 8540 feet, before a fishing job necessitated further efforts to complete it. That well, although awaiting completion, now ranks as the world's deepest producer.

Two other wells of the Big Lake company in the field are flowing steadily from the 8500-foot pay in beds of Pennsylvanian age. They are C-2 University, good for about 650 barrels daily, and C-4 University, 125 barrels daily. The C-2 well is producing upwards of 13,000,000 cubic feet of gas daily and the C-4 well 5,000,000 cubic feet.

Big Lake Oil Co.'s C-1 University, which had oil and gas shows at 8343 feet, is now in an incompleted stage below 8430 feet. Two Continental (Texon-Group 1) wells in Sec. 36, Block 9, immediately east of the Big Lake company's group are drilling, B-2 below 5915 feet and B-3 below 4360 feet.

Elsewhere in West Texas, definite attempts to penetrate Pennsylvanian beds have been made by Teas & Wheeler, drilling No. 1 Radford in shale at 4870 feet in Sec. 1, Block 27, Texas & Pacific railroad survey, Mitchell county; D. R. Thompson and others, drilling at 5658 feet in No. 1 Eddins, Sec. 10, Block C-1, Public School Lands, Reeves county; Transcontinental Oil Co., No. 1 University, Sec. 18, Block 18, Pecos county, drilling at 4915 feet; Kingwood Oil Corp., No. 1 Sugg, Sec. 10, Block 1, H&TC survey, Irion county, total depth 7818 feet, no results; C. H. Williams, No. 1 Ash, Sec. 20, Washington school lands, Irion county, drilling in shale and lime at 7983 feet.

Other deep tests in West Texas, which may or may not be carried to levels where the drill is calculated to reach Pennsylvanian beds, include: Lockhart & Co.'s H-1 Wheat, Sec. 85, Block 33, Texas & Pacific survey, Loving county, drilling at 5066 feet; Phillips Petroleum Co.'s No. 1 Whitten, Sec. 35, Block LL, Sleicher county, cementing cave at 6020 feet; and Shell Petroleum Corp.'s No. 1 Sloan, Sec. 16, Block 5, H&TC survey, Ward county, drilling at 4230 in lime.

As possibilities exist for deeper oil than present production from the Permian lime pays of some of the developed areas in West Texas, it cannot be said with certainty what depths may be tested in some of the drilling wells now under way. Failing to find lower Permian production, the owners of some wells may carry them down to the deeper Pennsylvanian horizons.

Aside from the completion of wells actually producing from the Pennsylvanian beds in the Big Lake field, no more important discovery has been made in West Texas deep testing than the finding of basement rocks in a Pecos county test of the Shell and Humphreys Companies, in University block 26.

The test, drilled several months ago, is near the crest of the well known Fort Stockton structural "high," where the deepest earlier hole had been carried to about 4500 feet. The Shell-Humphreys test was abandoned at 5204 feet in rocks generally described as granitic material.

Occurrence of basement rocks within 5000 feet of the surface in Pecos county has encouraged the thought among geologists that the flanks of the regional structure hold possibilities for Pennsylvanian oil in some parts of the Permian salt basin at shallower depths than at Big Lake. Wrinkles on the floor of the basin may also provide traps for oil accumulation.

Conformability of the Pennsylvanian structure at Big Lake with the overlying Permian beds has encouraged the belief that similar conditions may apply in other producing areas of the salt basin. The Yates field of Pecos county, the McCamey district of Crane-Upton counties and the University-McElroy area of Crane county are especially favored for such possibilities. Deep tests in each of these areas will be made eventually.

A. S. M. E. May Open Tulsa Offices

TULSA, March 28.—The establishment of a southwestern office of the American Society of Mechanical Engineers, may result from a visit of its national officers to the Mid-Continent oil fields. It is anticipated that such an office would have its headquarters at Tulsa, and would be in charge of a field secretary.

This will insure the necessary secretarial assistance to co-ordinate the work of the various committees, plan meetings, issue minutes, and in general to promote activity along mechanical engineering lines as they affect the oil industry. Efforts will be made, it is understood, to correlate the work of the A. S. M. E. with the work of other technical organizations to avoid duplication of effort.

The trip which brought a dozen national officers of the society to Tulsa and the oil fields took the visitors through natural gas plants, pipe line pumping plants, drilling wells of all kinds, gasoline plants and refineries.

Alberta Production Doubles in 1929

TORONTO, Ont.—Crude oil production in the Alberta field for 1929 was about double that of 1928. The 1929 production was 999,152 barrels against 489,152 barrels for 1928.

Naphtha, 60 gravity and over, accounted for 908,741 barrels of production in 1929; light crude, 30 to 60 gravity, production was 73,808 barrels; and heavy crude, 30 and under, was 16,603 barrels.

The Turner Valley field was the largest producer with 908,741 barrels of naphtha and 72,480 barrels of light crude in 1929. Wainwright field production last year was 12,332 barrels; Ribstone field 2839 barrels; Skiff field 1432 barrels, and Red Coulee field 1328 barrels.

Correlation of Simpson Formation In South Central Oklahoma

By T. E. Weirich*

(Presented before American Association of Petroleum Geologists, New Orleans, March 20-22)

THE problem of correlation of the Simpson beds in Oklahoma presents two main features: southward divergence in thickness and lateral gradation of strata.

Measured sections of the Simpson in scattered wells and at its outcrop in the Arbuckle mountains demonstrate the probability of its greatest thickness as existing on the southeast rim of the Arbuckle mountains. The formation is missing entirely because of truncation in northeastern Oklahoma, over a part of the Arbuckle mountains, in southwestern Oklahoma including the Wichita mountains, and at the apices of certain subsurface folds, notably in the Cushing, Dilworth, Garber, and Oklahoma City oil fields.

Thickness of the formation increases from approximately 200 feet along the vicinity of the Arkansas river to a maximum of 2400 feet at the southeast edge of the Arbuckle mountains. Very little evidence is available on the south of the Anadarko Basin.

Certain wells which have penetrated the pre-Pennsylvanian section in Stephens county have encountered Viola limestone and the underlying Simpson beds without having reached the Arbuckle limestone[1]. Close proximity of these wells to others that have proven Pennsylvanian rocks to be resting directly upon the Arbuckle, is an indication that the Simpson does not exceed a thickness of possibly 1500 feet in central Stephens county. Decker and Merritt[2] report approximately 2120 feet of Simpson at the exposure in the Criner Hills, which lie to the south of the Ardmore Basin. This measurement does not indicate a noticeable thinning of the formation as compared to its thickness in the Arbuckle mountains on the north.

Total thickness of the Simpson in the Healdton field cannot be determined due to its unknown rate of dip and the indefiniteness of the Simpson-Arbuckle contact. Thus our present evidence is scarcely sufficient to indicate whether the Simpson formation continues to diverge southward entirely across the state or that northward divergence exists in Stephens and Carter counties.

Lateral gradation of Simpson strata may be applied in a general as well as in a detailed sense. Samples obtained from wells bear out the fact that the formation contains mainly sandstone and shale on the immediate north limb of the Arbuckle mountains, limestone on the south and east limbs, sandstone in northern Pontotoc and Garvin counties, and shale in Stephens and western Carter counties.

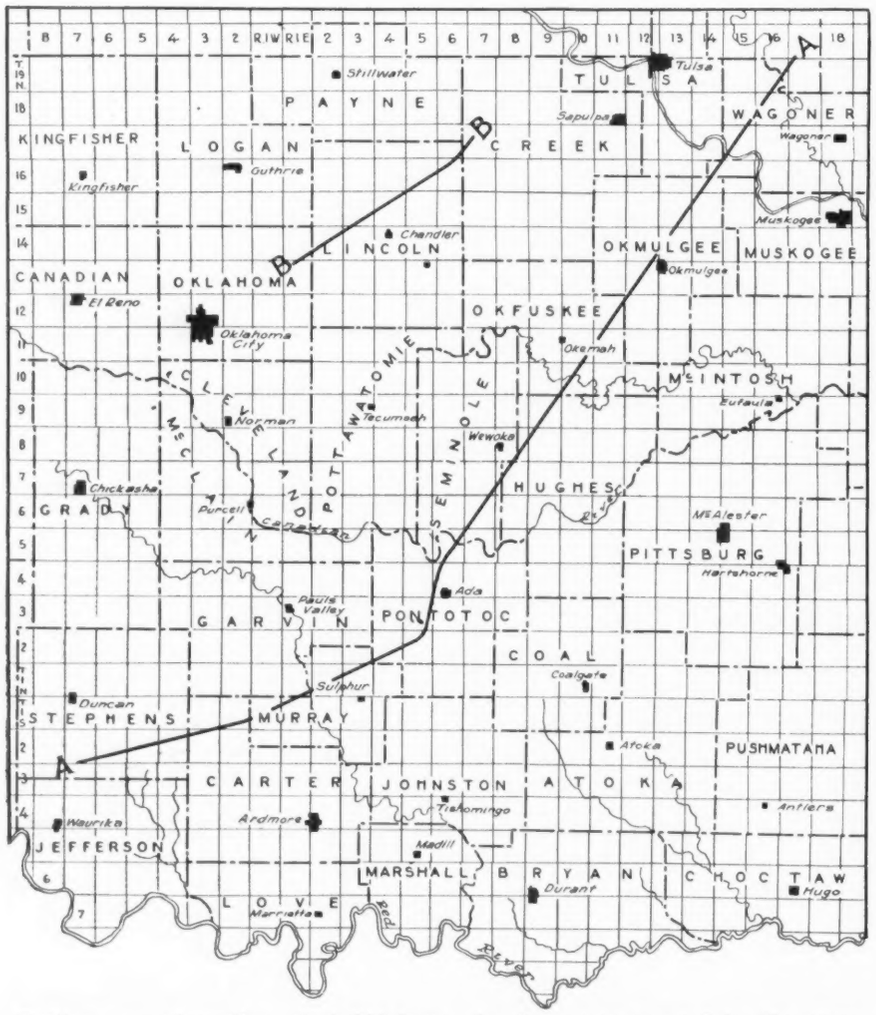
These facts add to our difficulties of correlation. The exact division between Black River and Chazy sediments lends little aid at the present time since the subject is controversial.

Description of Simpson Subdivisions

No attempt is made here to describe in minute detail the lithology of sub-divisions of the Bremide member. Those generally used by Oklahoma geologists and originating in the Seminole district[3] are:

Lithographic (or Dense) lime,
First Dolomite,
"Seminole" Sand,
Second Dolomite.

Lateral gradation of these sedi-



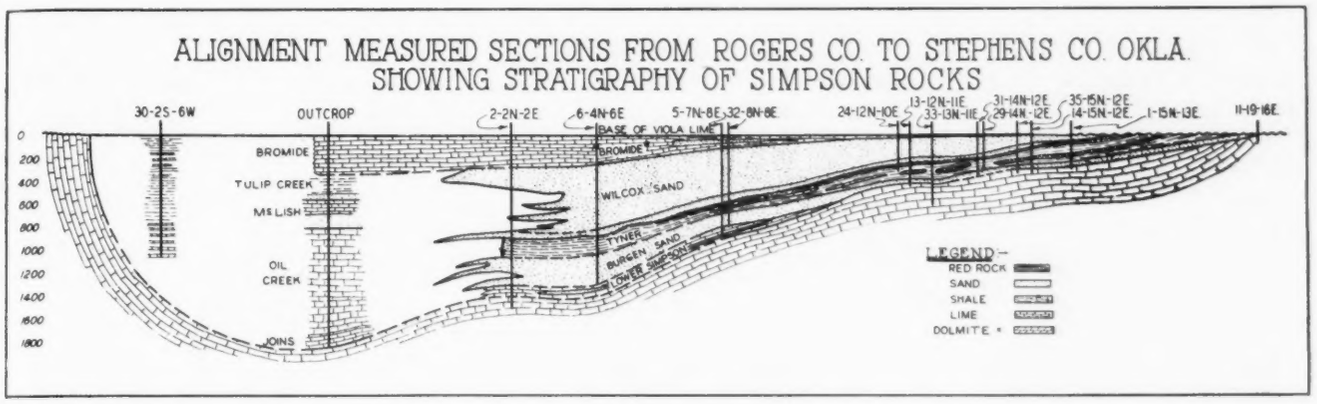
Outline map of south central Oklahoma showing areas covered by the cross-sections

*Chief geologist of the Tidal Oil Co., Tulsa, Okla.

[1]Gouin, Frank, "The Geology of the Oil and Gas Fields of Stephens County, Oklahoma," Okla. Geol. Survey Bul. No. 40E, October 1926. page 12.

[2]Op. cit.

[3]Levorson, A. I., "Greater Seminole District, Seminole and Pottawatomie Counties, Oklahoma," Structure of Typical American Oil Fields, Vol. II, page 333.



Cross-section A-A illustrating the southward thickening of the Simpson from Rogers county to the Arbuckle mountains. In 4N-6E, the section is predominately sand. On the outcrop in the Arbuckles it is mainly limestone while in 2S-6W, it is largely composed of shale. Correlation from these three points is difficult due to this lateral gradation. Terms and measurements used at "outcrop" are taken from Decker and Merritt

ments is not applicable except in the case of the "Seminole" sand. The sub-divisions in general may be correlated with comparative ease throughout the state.

The "Seminole" sand possesses characteristics of lateral gradation as shown by its lithology in various districts. In the Lovell pool, the Section is composed of green shales and sands; in the Seminole district, of sand; in the Maud and Ada district, of dolomite.

The Bromide as a whole diverges southwestward across the state. The thickness is 25 to 50 feet in Creek and Okmulgee counties, 200 feet in the Seminole district, and reaches a maximum of 620 feet on the south flank of the Arbuckle mountains.

The "Wilcox" sand member retains its distinction as a pure sand interstratified with minor thin layers of green shale throughout the central part of the state. Its position in the Arbuckle mountain section is questionable. In the latter region the lower portion of the Wilcox may have merged into limestone.

The member diverges southward. Although but 100 feet in thickness in the Cushing Field, the sand attains a total of approximately 625 feet near Ada in Pontotoc County and about 900 feet near Pauls Valley in Garvin county. No such thicknesses as these exist on the immediate north flank of the Arbuckle mountains nor on the south flank some 40 miles to the south.

Lateral gradation of lithology in the Tyner member is a prevailing characteristic. In general the member is composed of green or dark shale with included sand or maroon shale zones. Its upper surface may consist of shale, sandstone, or sandy dolomite. Usually the middle portion is distinguished by the presence of maroon shales.

Considering the heterogeneity of the Tyner, it is fortunate that these maroon shales are present since they afford definite means of correlation. The lower Tyner may be composed of sandstone, dolomite or shale. The member may be carried from Creek county as far south as Ada, but cannot be identified at the outcrop in the mountains farther to the south.

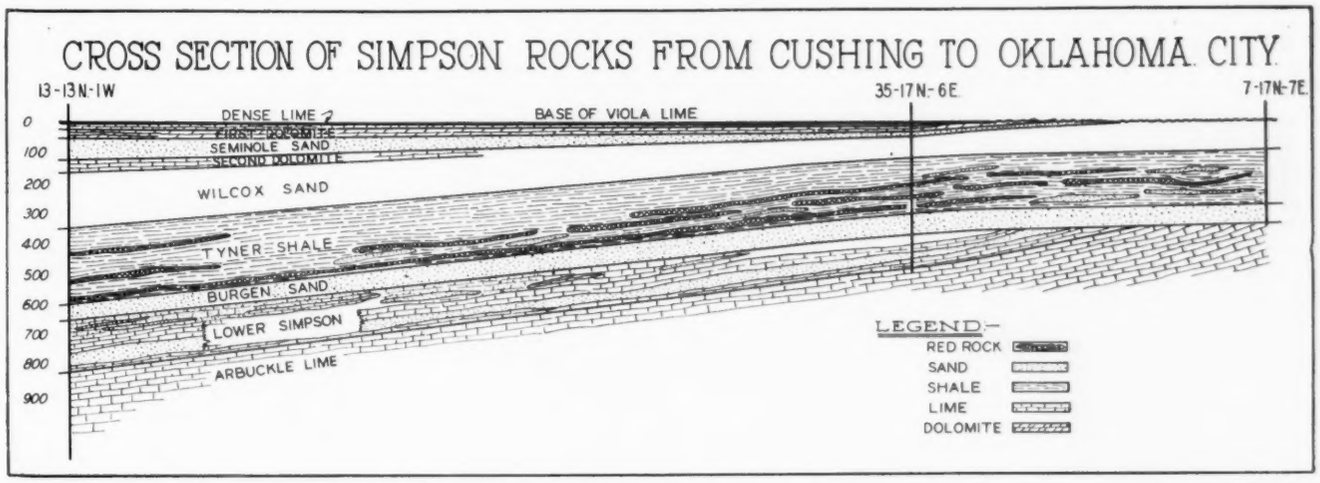
Sedimentation during Tyner times suggests that subaerial conditions controlled deposition. The presence of maroon shales suggests a possible unconformity existing in the middle part of the Tyner. Age of the member, whether Black River or Chazy, is unknown as fossils assigned to both ages are included.

The Burgen member, similar to the Wilcox, is a pure sandstone. Shales and dolomites, although present, are insignificant. Thickness of the Burgen is variable. Southward divergence applies as in the remaining Simpson members.

The Simpson below the Burgen sand is undifferentiated. Not present in the Creek and Okmulgee region, this "Lower Simpson" has received little notice. Due to its productivity of oil and gas in the Oklahoma City field, the member is now being subjected to intensive study.

In this field Simpson is found in unconformable contact with overlying Pennsylvanian rocks. Heterogeneity of the Simpson has suggested a sec-

(*Continued on Page* 45)



Cross-section of B-B from the Cushing anticline to a well near Oklahoma City showing the absence of "lower Simpson" beds on the former. They may be seen on the west flank and continue westward to Oklahoma City. In the latter pool the "lower Simpson" is commonly referred to as the "detrital zone" and the producing wells therefrom as "sand wells"

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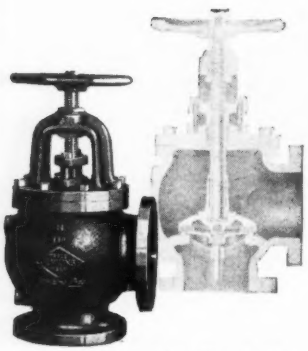

Fig. 144, Jenkins Standard Iron Body Angle Valve, flanged.

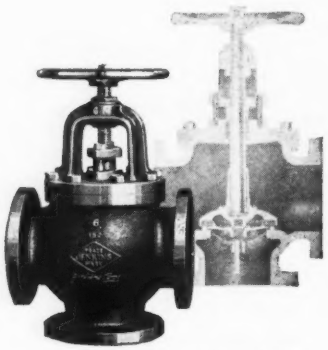

Fig. 146, Jenkins Standard Iron Body Cross Valve, flanged.

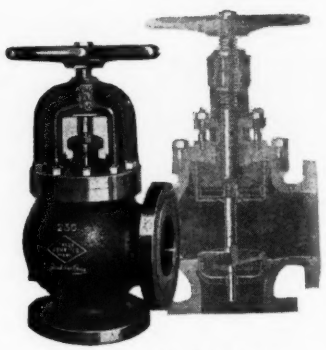

Fig. 293, Jenkins Extra Heavy Automatic Equalizing Stop and Check Angle Valve, flanged.

Jenkins durability puts valve service on its most economical basis

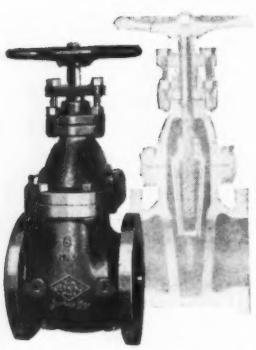

Fig. 326, Jenkins Standard Iron Body Gate Valve, flanged.

CAST of high-test iron, these Jenkins Iron Body Valves possess iron constitutions. Strength and durability are their outstanding characteristics.

It is these characteristics which put valve service on its most economical basis in the field, refinery and power plant. Jenkins strength contributes definitely to lower maintenance by reducing costly shut downs, replacements and repairs, by providing long, leak-tight valve performance.

Jenkins Globe, Angle, Cross, Check and "Y" Valves for oil service are fitted with a special Jenkins oil-resisting renewable disc. Jenkins Gate Valves may be ordered oil-packed and oil-tested.

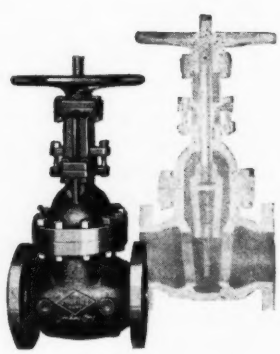

Fig. 204, Jenkins Extra Heavy Iron Body Gate Valve, flanged, with outside screw and yoke, rising spindle.

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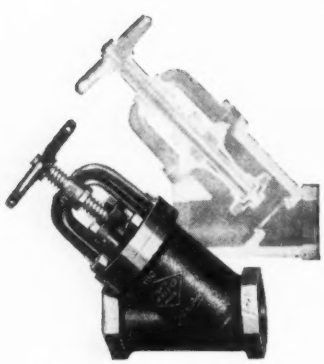

Fig. 296, Jenkins Standard Iron Body "Y" Valve, screwed.

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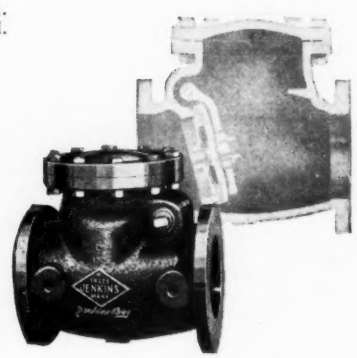


Fig. 295, Jenkins Standard Iron Body Swing Check Valve, flanged.

SENATOR BLAINE, of Wisconsin, emitted loud whoops when he got the report that some Oklahomans were about to boycott Wisconsin products because Blaine had opposed the oil tariff. The senator excites easily and seems to love to build up straw men in order that he may summon a crowd to watch him demolish his own handiwork. We have heard of one bit of boycotting—a sort of one-man affair. It seems that an oil operator saw some Wisconsin cheese displayed in his grocer's window, went in and demanded that they be removed for all time under pain of losing the operator's custom. We have not verified the story, but if it were true it would not signify a state wide conspiracy.

Since the senator has advanced the idea, however, we think it has possibilities and we hereby set out our personal boycott of things pertaining to Wisconsin:

1—That tourist camp near Beloit where we were so foolish as to stop one night last summer, other hotel accommodations being unavailable. One or another of the guests is warming up his engine most of the night and people shout directions to each other across an acre lot.

2—Green Bay as a place to spend Sunday should be boycotted.

3—The golf course at Sturgeon Bay, ditto the one at Ephraim. The first-named consists altogether of casual water and frogs and the latter has so many players that it amounts practically to a parade.

Otherwise, it seems to be a swell state, although it would appear a trifle absent minded when electing a senator.

* * *

The Indian Territory Illuminating Oil Co. is building, as the central structure of its Oklahoma City field camp, a two stories and basement office, 60 by 112 feet. The personnel now occupying most of two floors in an uptown building will all be moved to the new offices on completion, about 60 days hence.

* * *

Sale of the properties of the Goldel-line Oil Co., headed by Dr. J. B. Umpleby, of Oklahoma City, in Hutchinson county, Tex., was recently completed. The deal involved 960 acres with nine wells producing around 200 barrels daily. Harry Stekoll, of Tulsa, was the buyer.

* * *

Ellick Botts, popular ex-pumper of the Gray Horse district sees in the federal prohibition bureau's announcement of a new denaturant for alcohol, made of petroleum, merely another sinister plot to bring the oil industry into public disfavor.

* * *

One Edward E. Ertel, of Taylor, Texas, writes to invite us to buy some shares in his well. Sezze "My Williamson Structure Makes Good." In other words, just a country structure that is making good in the city.

* * *

The special session of the Kansas legislature has adjourned, it being time to plant oats. Says the Bulletin of the Mid-Continent Oil & Gas Association: "The report of the Kansas tax code commission recommending a gross production tax on oil and an income tax on individuals and corporations was submitted by the governor to the legislature but the only action taken with reference thereto was a resolution thanking the tax code commissioners for their unselfish and faithful service in making the study of these subjects."

Could Sec'y. Smith have been in slightly sarcastic mood when he wrote that?

* * *

That old standby of the thirsty soul, Jamaica ginger, is quite unpopular in these parts since the mysterious malady struck Oklahoma City. Some 350 persons were affected in various degrees. Paralysis was the principal manifestation. City medical authorities blamed it on the ginger, or "jake," as it is usually called. It and "choc" beer are favorite oil field tipples. The "jake" is a red hot concoction, guaranteed to bring temporary oblivion to all troubles after the second big shot. The "choc" tastes something like battery water flavored with motorman's glove, if you can imagine such a combination.

* * *

Carl E. Good, purchasing agent for the Barnsdall Companies in Tulsa, has been made a vice-president of the Barnsdall Oil Co. of California and has gone to Los Angeles. He will supervise purchases for that company and carry out other duties in connection with supplies.

Mr. Good is a native of Ohio. He came to the Barnsdall organization 11 years ago from the National Supply Co. in California. The Barnsdall offices at that time were in Bartlesville. He has been active in the Tulsa Purchasing Agents' Association and has a wide acquaintance among oil and supply men.

O. E. McClatchey succeeds Mr. Good in Tulsa as chief purchasing agent for Barnsdall. He has been in the service of the company almost as long as has Mr. Good. He joined the organization 10 years ago as Mr. Good's assistant. A native of Kansas, Mr. McClatchey was with the Empire companies before the war and after 23 months overseas returned to that company from where he went to the Barnsdall. He is at this time president of the Tulsa Purchasing Agents Association.

Carl E. Good

Prairie Opens New Pool in West Kansas; Oklahoma City Gusher Goes Wild

By Lawrence E. Smith
N. P. N. STAFF WRITER

TULSA, March 29

A WILDCAT strike in western Kansas, an interesting showing in a test in one of the southern tier of counties of Kansas, far west of production, an extension of a half mile to the Voshell pool, McPherson county, Kans., and a "wild" well in the Oklahoma City pool, possibly the largest ever drilled in the state, were events of chief importance in the Mid-Continent the past calendar week.

The wildcat which opens some kind of a pool is the No. 1 Davidson of the Prairie Oil & Gas Co., in the NW NW SE of 4-16S-11W, Barton county, Kansas. Barton is the county next south of Russell, which has several small producing fields and adjoins on the west Rice county, in the southwest part of which is the new Schurr pool.

The Prairie wildcat found the top of what is known as the Gorham sand, a lime pay productive in Russell county, at 3317 feet. The pay was topped at 3332 feet and the well drilled in three feet. It made 70 barrels on swabbing test, nearly exhausting the fluid. It was then drilled five feet deeper and filled up 2000 feet with oil. On another swabbing test which lasted 17 hours the production was 153 barrels. This test failed to lower the fluid below 700 feet off bottom. The last foot drilled showed a small amount of water. Gravity of the oil is 38.

The Prairie has a block of more than 3000 acres of leases but the northwest quarter of the section in which the well is located is under lease to other operators. The Prairie has said that it will shut the well in completely or pinch it in to nominal production in order to delay drilling.

There are no pipe lines in the region. It will be necessary to lay 11 or 12 miles of line to railroad in case the well is produced. Nearest production is the small Sellens pool, Russell county, 10 miles west.

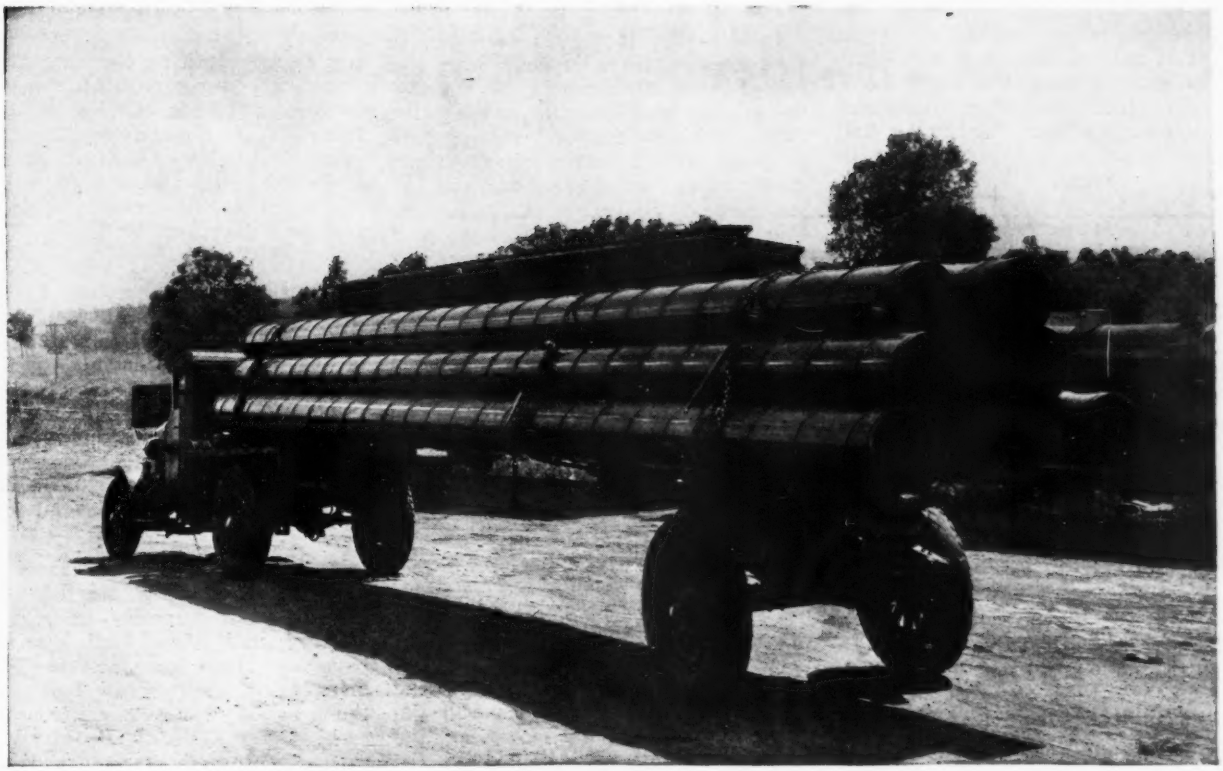
Not so positive as the Barton county strike but of considerable encouragement is the showing found by the Skelly Oil Co. in its test in Barber county, Kans. The well, SE SE NE of 13-34S-15W, near the inland town of Aetna, found the top of the Viola lime at 5241 feet and at total depth of 4246 feet had a showing of oil and about one and one-half million feet of gas daily.

There is considerable water in the hole, but a sizable batch of it was picked up at 4650-71 feet. The six-inch pipe is set at 4568 feet so it is not known whether any of the water comes from the Viola lime. The 6-inch pipe is "frozen" and cannot be moved, so a string of 5-inch will be set and cemented at the top of the Viola and the hole then will be tested for the worth of this showing. That will require a week or 10 days.

The Voshell pool, of McPherson county, Kans., had its ups and downs during the week. Hailed at its inception as a field that might reach a peak of 50,000 barrels daily or better, it has dwindled in importance to the point where something unexpected must occur to raise it to the figure to which it is "prorated." Its daily yield is between 9000 and 10,000 barrels, doing all it can, although it was "limited" to 15,000 barrels, which is the pipe line outlet. However, this agreement was reached before the run of bad luck set in.

There is the chance that the present campaign of deepening Wilcox

The No. 1 Mary Sudik well of the Indian Territory Illuminating Oil Co., south end of the Oklahoma City pool, which went wild. It is making an estimated two hundred million feet of gas daily and is flowing oil at a rate guessed by some expert guessers at 50,000 barrels a day or more. All drilling operations on the lee side of the well were shutdown, as well as any other work that might cause a fire. Guards and deputy sheriffs kept the crowd out of the danger area. It is reported that the spray of oil reached the town of Norman, 11 miles south. (A commercial photographer, by greasing his face and wearing overalls, managed to escape the attention given by guards to people with cameras)



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sand producers to the Siliceous lime will swell the present output some, but it is not counted upon to disturb things any. During the week E. W. Marland, Inc., effected an extension or picked up a new "hickey" a half mile north of present production. His No. 1 Moorhouse, SW NW of 3-21-3W, found top of the Wilcox at 3408 feet and was drilled to 3419. It swabbed 360 barrels in 12 hours and lowered fluid to within 500 feet of bottom. It was deepened two feet and swabbed 425 barrels in 12 hours and then deepened two feet more to 3423 feet, again increasing the production. No water has appeared.

On the east side of the pool there is a regular nest of failures. The Gypsy Oil Co.'s No. 1 Stuckey, SW SE NW of 10-21-3W, is being plugged. Its failure was previously noted in these columns. Sinclair Oil & Gas Co.'s No. 5, west offset to the Gypsy failure, had Wilcox at 3462-65 and the hole started filling with sulfur water. The Texas Co.'s south offset to the Gypsy test had Wilcox at 3539-44, drilled one foot of shale to '45, and got a hole full of water.

To round out the affair nicely, the Prairie Oil & Gas Co.'s southwest offset to the Gypsy failure got a hole full of water from Wilcox at 3440-50. This completed the pattern of failures in that direction.

On the west side original oil producers are showing water. The Dixie Oil Co.-Amerada Petroleum Corp.'s well in the NE SE NW of Sec. 9, which produced oil for a time, went to water some weeks ago and now two wells of the Indian Territory Illuminating Oil Co. in a line directly north of this, one an offset to the Dixie-Amerada well, are showing water as is the Gypsy Oil Co.'s well just north of the northerly I.T.I.O. well.

The brighter part of the Voshell pool performance the past week was the contribution to output made by the Siliceous lime underlying the Wilcox. Derby Oil Co.'s No. 8, SE NE SE of 9-21-3W, swabbed 1839 barrels in 24 hours from what is thought to be the Siliceous. It had previously produced from the Wilcox, topped at 3347 feet. Its present total depth is 3415 feet.

Empire Oil & Refining Co.'s No. 3 Voshell, SW SE NE of Sec. 9, topped the Siliceous lime at 3389 feet and was drilled to '94. From pay at 3390-94 it swabbed 240 barrels in four hours. There will be a general campaign of deepening immediately.

Oklahoma City had several thrillers during the week. From an economic standpoint the most important was the completion of the No. 1 Cunningham of Heenan & Coe, a well known independent firm that has operated for years in southern Oklahoma and north Texas. The well is on a small tract—less than eight acres—and extends the so-called "sand" production a half mile north.

Incidentally, it proves territory in that area where everybody long has feared production would be found—up in the town-lot stuff, among the little chicken farms, cotton compresses, city pest house, small dwellings and such oddments and impedimenta. Oklahoma City is setting out to have a small replica of the Signal Hill type of development on its hands.

The Heenan & Coe well is in the center of the north half of the SW NE SW of 1-11-3W. It found sand at 6355-6407 feet and its first hour's production was 1017 barrels. The second hour's gauge was 843 barrels. In 7½ hours it made 6675 barrels and was then shut in for tankage.

How far north of this the productive zone will extend is anyone's guess. This well has plenty of "kick" and it looks as though a great deal of the town lot area in the southeastern part of the city will produce.

More spectacular that this was the performance of two wild wells, one of which at this writing is still going and is rated by some as the largest oil well ever drilled in the state. There isn't any way of telling what the well is really doing, as the oil is spraying about over the country. A light mist of it is reaching as far south as Norman, 11 miles away, it is reported. All connections have been torn away by the terrific force of an estimated 200,000,000 cubic feet of gas daily. A rough, horseback guess as to the oil production puts it around 50,000 barrels per day.

The well which is thus misbehaving is the Indian Territory Illuminating Oil Co.'s No. 1 Mary Sudik, NE SW of 31-11-2W. It has total depth of 6470 feet, producing from the sand zone responsible for so many good wells in the south and north parts of the field. It blew in unexpectedly while plugs were being drilled out, bringing 20 joints of drill pipe out of the hole and damaging the derrick.

At first it was a dry gasser, but drilled itself in and started making oil, in small quantity at first, but steadily increasing. All connections have been torn loose and the job of bringing it under control is one of the greatest that ever confronted operators in the Mid-Continent.

offset to the No. 2 Hoopes well of

It is only a slight extension of producing territory, being a southwest T. B. Slick and Anderson-Prichard, which produced 6578 barrels in 12 hours.

Production of the field varied during the week, the range being 51,795 barrels to 81,695. Production from the wells authorized to produce is 12½ per cent. This percentage is being increased April 3 to a theoretical 16 2/3 per cent, or each legal producing well will be operated one day in six. Purchasers of oil signified their desire to take more oil than is now being produced, indicating that a demand of around 116,000 barrels per day would presently be in order.

Wildcat activity in the Oklahoma City region failed to bring out anything significant over the week. There is some interest in the Mid-Kansas Oil & Gas Co.'s No. 1 Trosper, SE NE SE of 24-12-2, just east of Oklahoma City. It is a half mile from the well drilled several months ago by Mid-Kansas and Ramsey Petroleum Corp. in the Nicoma Park area. The latter was a Wilcox failure but plugged back to a shallower sand and made a 250-barrel daily producer. The Mid-Kansas' present test was drilling at the end of the week at 6883 feet in sandy lime with nothing showing. Top of the Simpson formation was 6700 feet.

There was nothing in the whole Seminole area to cause the pulse to beat any more rapidly. Outside of Oklahoma City there is nothing in sight at this time to threaten the market, or what market there is left, either in Oklahoma or Kansas. May it long continue to be thus.

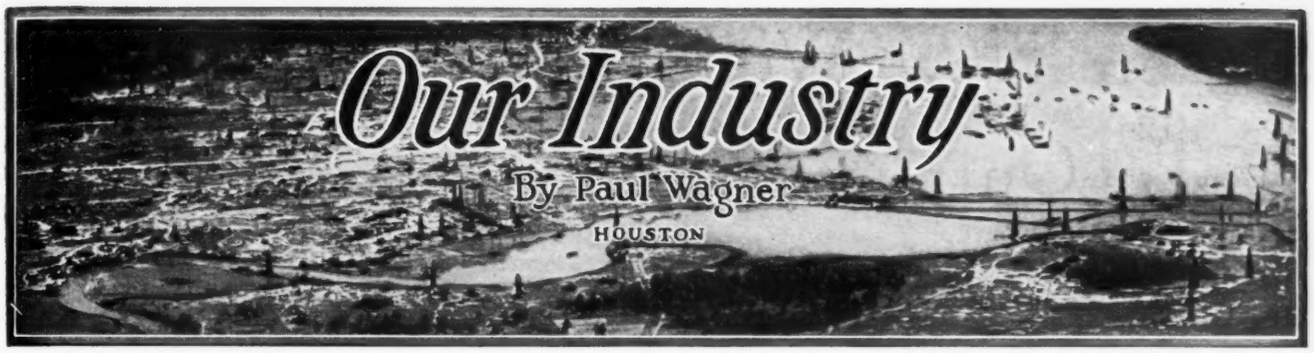
Fourth Federal Oil Board Report to be Issued

WASHINGTON, March 31.—The fourth report of the Federal Oil Conservation Board has about come from the hands of the printer. It should be ready for promulgation in a few weeks, perhaps the latter part of April. It will consist of four parts, namely, the economics of the petroleum situation; the economics of natural gas distribution; revision of estimates of potential production; and unit operation, with special attention to the holding back agreement concerning the Kettleman Hills.

Very late figures about the distribution of natural gas have been gathered. Great details will be shown about the Kettleman Hills agreement and the various forms of cooperative and unit development schemes in operation in the Kettleman Hills.

It is fairly definite that the report will refrain from making any definite estimate of potential production of crude. Instead of making an estimate of that sort the report, it is understood, will emphasize the facts tending to show the inadequacy of the estimates heretofore made.

Facts that have discredited the earlier estimates will be set forth. They will be there for use by such as feel they cannot resist the urge to set a limit upon the amount of crude that may be found in the future. The board will not attempt to interpret them for projection into the future.



THE leading exponent in Texas of a tariff on imported oil is Tom E. Cranfill of Dallas, president of the Cranfill-Reynolds Oil Corp. of Delaware, which is now affiliated with the United Gas Co. (Moody-Seagraves interests) of Houston. Mr. Cranfill and J. H. Reynolds formerly operated through a corporate partnership known as Cranfill & Reynolds, Inc., but several months ago they joined in organizing the aforementioned Delaware holding corporation to affiliate their producing interests with the Central Texas Refining Co., and include the Gulf Coastal oil properties of the Moody-Seagraves group.

Mr. Cranfill is the newly elected president of the Independent Petroleum Association of Texas, formed to affiliate with Wirt Franklin's national organization working for a tariff on imported oil. In addition, the Texas group headed by Mr. Cranfill is committed to efforts to revise pipeline transportation schedules in the southwest and attempt passage of a law providing for credit balance handling of crule oil runs. Legislation sought in Texas would call for common purchaser and common storage provisions.

From a small beginning in Ranger development days, Mr. Cranfill expanded his operations in central Texas, making his most important early successes in the sand pay districts north of Brownwood. Later, in association with J. H. Reynolds, a pioneer of Tampico district operations in Mexico, he expanded into west Texas. There, as a Winkler field operator, the company Mr. Cranfill headed was spectacular. Activities also include the Lea county district of southeastern New Mexico, northerly from Winkler development. In the Gulf Coastal territory, the company's most important strike has been on the Eastern dome, east of Houston, on acreage acquired from the Moody-Seagraves interests in the holding company consolidation.

Tom E. Cranfill

* * *

Director E. M. Linsey of the Magnolia band at Olden, Texas, in the general Ranger territory, reports the increase of the company band there to 39 musicians. New uniforms are being purchased for the summer season.

* * *

H. W. Lowrie, Jr., a member of Secretary Wilbur's federal committee on oil industry economics, recently moved to Midland, Texas, from his earlier home at Denver. Mr. Lowrie has been for years a principal in the consulting geological firm of Fisher & Lowrie, widely known in Rocky Mountain territory.

* * *

Honolulu Oil Co., Texas and New Mexico subsidiary of the Honolulu Consolidated Oil Co., San Francisco, has opened offices at Midland, Texas, in charge of P. F. Brown.

* * *

Virgil Whitworth, for three years identified with the Simms Oil Co., Dallas, and later connected with the Shell Petroleum Corp.'s geological department for a similar period, is now in charge of work for the Deep Rock Oil Co., subsidiary of the Shaffer Oil & Refining Co.

* * *

Walter K. Campbell, long identified with the Mid-Continent petroleum industry, both as a producer and a marketer, is now making his home at Wichita Falls, looking after field properties in the general North Texas territory. He moved to Wichita Falls from Tulsa several months ago. Mr. Campbell, on occasion, has a faculty of reminding his friends of unpleasant occurrences, as witness his dragging up at a recent reunion in Fort Worth the circumstances of an earlier "stud" game wherein the writer participated. It will be sufficient for the reader to know that Mr. Campbell made a royal flush in "stud," whereas the writer seems to remember something about three-of-a-kind.

* * *

Wallace C. Thompson is now in charge of the Sun Oil Co.'s geological work in the East Texas district, making headquarters at Tyler. He was recently transferred from Wichita Falls.

* * *

C. L. Dobbins, recently of the Atlantic Oil Producing Co. organization at Dallas and previously Gulf Coast division manager at Houston, has returned to South Texas, engaging in business on his own account. He will form an independent company for the handling of royalties, leases and drilling operations.

* * *

H. W. Rose is in charge of geophysical offices recently opened at Los Angeles by George Steiner, consultant, of Houston.

* * *

E. W. Ames, consulting geologist, formerly of Cisco, Texas, has moved his offices to San Antonio.

Walter K. Campbell

Seven New Wells Add 3000 Barrels To Output of Long Beach Field

By Jack N. Westsmith
N. P. N. STAFF WRITER

LOS ANGELES, March 28

THE operative effect of actual enforcement of California's gas conservation law continued to hold the interest of the oil industry on the Pacific Coast. Although wastage of natural gas at Santa Fe Springs has been reduced to within 85 million cubic feet of the allowable, at a great cost to small operators, it became evident late in the week that several companies may throw upon state officials the burden of closing down high oil-to-gas ratio wells.

Modification of the present restraining order is reported in preparation that will have as an objective the addition of natural gas outlets through repressuring in shallow sands at "the Springs," and in other nearby fields. It is expected that the court will allow operators, who install the necessary equipment for storing excess natural gas in the upper formations, to produce a larger percentage of the "gas allowable" of the field.

A survey of development conditions at Santa Fe Springs shows that, notwithstanding the apparent injurious effect on some operators by the gas law, there continues to be drilling activity in various sections of the field. The following table gives the distribution of drilling wells in the various zones:

Wells drilling above the Meyer zone	4
Wells drilling below the Meyer zone	4
Wells drilling below the Buckbee zone	7
Wells drilling below the O'Connell zone	29
Wells drilling below the Clarke zone	43
Total active drilling wells	87
Total idle drilling wells	38
Total drilling rigs	4
Total drilling projects	129

Because of unsatisfactory results that are being obtained from completions in the Clarke sands several operators have decided to give the upper sands a production test. Union Oil Co. completed its Howard No. 15 in the Bell zone at 4129 feet for an initial production of 160 barrels of 27 gravity oil. The Bell zone, that held the spotlight during the drilling activity of 1922, has been considered as out of the picture and has been practically forgotten during the rush of development work following discovery of the Buckbee sand in 1927.

Union also produced another surprise for operators at Santa Fe Springs by the completion of its Bell No. 54 at 7960 feet in the lower Clarke zone for 993 barrels of 32.8 gravity oil, with a cut of 2.7 per cent. The unusually large yield was attributed to the use of double gas traps and less back pressure. The gauge readings showed a tubing pressure of 80 pounds and a casing pressure of 720 pounds.

Richfield Oil Co. had to put its Howard No. 4 on the compressor when it was completed at 8050 feet for an initial output of 205 barrels per day of 29 gravity, 18 per cent cut. Standard Oil Co. had to follow a similar procedure with its Whittier Community No. 22 that was completed at 8016 feet for an initial production of 35 barrels per day.

Completion of seven new wells at Signal Hill in the Long Beach field added approximately 3000 barrels of flush oil to the field's daily output and prevented conservation leaders from attaining their goal of 92,340 barrels per day.

Good commercial production was obtained by E. B. Campbell, an independent operator, through the completion of his well No. 4 for an initial production of 1100 barrels of 29.3 gravity oil from a depth of 6800 feet. The well is producing through open hole from 6610 to the bottom. Hughes No. 1 of the Two in One Oil Co. was put on production for 800 barrels from a depth of 7039 feet, for the only other sizable completion during the week.

The following figures give the deep sand production and operation in the Long Beach field for week ended March 28:

Company	No. Wells	Prod. B/D	Ave. B/D
Dabney-Johnson	34	5,720	168
General Pet.	11	1,422	130
Richfield	33	7,115	216
Shell Oil Co.	82	13,690	167
Texas Co.	22	2,805	127
Union Oil Co.	7	700	100
Misc.	219	41,982	192
Total	408	73,434	180

Considerable drilling activity on the southeastern flank of the Signal Hill uplift is expected to prove up a large area. Following the completion of a deep test by State Oil Co., a number of projects initially completed at shallow depths were killed and deepened to tap the new producing horizon.

After a delay of several months during which a complete change of surface equipment was made in order to insure absolute control of the well, Belridge Oil Co.'s No. 15 bottomed at 5086 feet in the Belridge district is reported to be ready for a production test. Considerable interest has been evidenced by other California oil companies that have acreage in this area. Belridge is reported to have cored over 100 feet of heavily saturated oil sand with a high gravity test.

Although General Petroleum Corp. recompleted its Ferguson tideland permit well No. 2, offshore from the Rincon field for an initial production of 500 to 600 barrels at 3146 feet in the Miley zone, it was later killed to deepen in search of other producing levels.

Several weeks ago this test of the submarine section of the Rincon field made approximately 450 barrels from a depth of 2600 feet but the well was immediately killed as the purpose of the project is to validate the company's tideland property and to determine the potentialities of the various zones. Honolulu Consolidated Oil Co., which owns an adjoining permit is reported to be sharing the expense on the Ferguson well.

General Petroleum also killed its second big gasser on the More ranch in the Goleta district after the well had blown in making more than 50 million cubic feet of gas daily. The company is still in a quandary as to whether this gas zone it has penetrated is indicative of an underlying oil sand. It is agreed that the wells are bottomed in the Vaqueros sands that proved so productive at Elwood but there is no evidence that the formation contains more than an extremely large volume of gas.

Drl'g Wells	Idle Wells	Ab'd Wells	Cleaning Out	Rigs Loc.	Shut-in
13	7	0	0	3	0
2	3	0	0	0	0
2	5	1	1	1	18
3	4	0	0	0	14
4	0	0	0	0	1
0	3	0	0	0	1
70	60	1	16	29	14
94	82	2	17	33	48

Twin State Oil Co. is reported to have penetrated an oil sand at a

depth of 2556 feet in its well located at Point Arena, Mendocino county. The company has been drilling for over seven months on this project that is purely a wildcat. Point Arena is a small community on the California coast nearly 150 miles north of San Francisco and although the area has been given shallow tests by small companies this is the first actual examination by a large company.

Twin State is a subsidiary of the Sun Oil Co. of Philadelphia and controls 6500 acres in the area. The company's geologists have found three likely looking structures and if the present test proves commercially productive a second well may be drilled immediately on one of the other structures.

Correlation of Simpson

(*Continued from Page* 37)

ondary origin, hence the term "Detrital Zone."

Roth[4] has recently pointed out that persistent strata and an abundance of Simpson fauna in wells in the field precludes the proposal that a zone of true detrital material exists.

Detritus, as proposed by Zavoico[5] composed of reworked Simpson material by a Pennsylvanian sea must necessarily contain an intermixture of Simpson and Pennsylvanian rocks. Such is indeed not the case on the west slope of the Oklahoma City Field.

The lower Simpson is not present in wells drilled on the apex of the Cushing anticline, but enters the section on the west limb, whence the zone may be correlated westward to wells drilled in or near the Oklahoma City Field. With knowledge obtained from wells at Cushing, Oklahoma City, Wewoka, and Seminole, we may soon be able to differentiate at least the upper part of this "Lower Simpson."

[4]Roth, Robert, "Simpson versus Detritus," Amer. Assn. Petrol. Geol. Gul. No. 2, February, 1930.

[5]Zavoico, Basil B., "Oklahoma City Pool, Oklahoma," Amer. Assn. Petrol. Geol. Vol. XIII, No. 10, 1929, Page 1393.

On the Western Front

By Jack N. Westsmith
Los Angeles

J. A. BERMINGHAM, vice president and manager of the producing department of the Texas Co. on the Pacific coast, recently made a flying trip to Chicago to see his daughter who is recovering from a serious illness. Leaving Los Angeles Feb. 22 Mr. Bermingham was able to spend several days in the eastern city and still not be absent from his headquarters for more than a week. He returned via the Western Air Express route, arriving on the Pacific coast March 1.

* * *

H. L. Kuhns, who had a dream of bringing in a well near Los Banos and who drilled several tests of the area, died recently, without having obtained commercial showings. Mr. Kuhns, was nearly 80 years of age and up until almost the last was able to supervise work on his latest test.

* * *

Al. Brain was elected president of Blackwell & Sunde Inc., machinists and tool manufacturers of Long Beach, Cal., at the annual meeting of stockholders Feb. 13. Other officers elected include: B. W. Sunde, vice president; B. E. Cosgray, secretary-treasurer and C. M. Rood, general manager.

* * *

William T. Ford, chairman of the board of the Owen-Illinois Glass Co., has been elected president of Bolsa Chica Oil Co., to succeed Irving V. Augur, who died recently. Dora D. Augur, widow of the late president, and E. O. Slater, manager of Smith-Emery Co., have been elected directors. Mr. Slater will fill the vacancy created by the resignation of J. B. Elliott, who was also vice president of the company.

During the comparative inactivity in the oil industry on the Pacific coast during the past month a number of prominent men have delved into matrimony.

Judge E. D. Reiter, former chairman of the Kettleman Hills Conservation committee and legal counsel for Miley Oil Co., and more recently chairman of the independent operators at Santa Fe Springs, surprised many of his friends by the announcement of his marriage March 2 to Miss Charlotte Temple Logan of Los Angeles.

Photo by Curtis Biltmore Studios L. A.

A. H. Bell, general superintendent Continental Oil Co., in California, elected to the position of chairman of the Pacific Coast section of the production division of the American Petroleum Institute, at the annual meeting March 20-21

R. E. "Honey" Earle, agent, geologist and engineer for the Italo and McKeon interests, and formerly a University of Southern California football star was married, late in February. The newlyweds have put off their honeymoon until later in the year.

Walt. Crown, engineer of the division of oil and gas of California State Mining Bureau also passed up the state of single bliss when he took unto himself a bride Feb. 22.

* * *

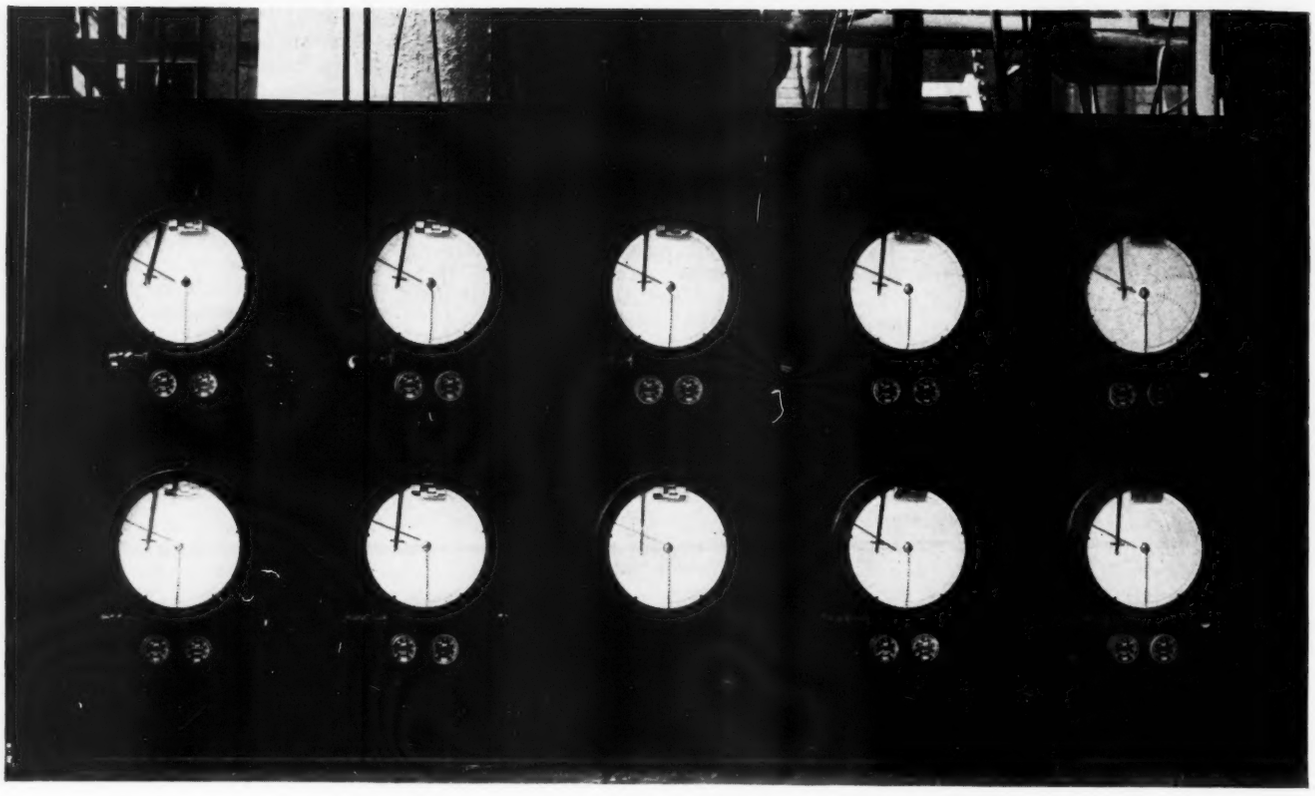
J. B. Case, chief deputy Supervision of the State Mining Bureau, Division of Oil and Gas, with headquarters at Los Angeles is confined to his home with a severe case of the mumps.

* * *

Bob Keyes, formerly deputy supervisor for the State Mining Bureau at Coalinga, now is resident geologist for the Texas Co. in the San Joaquin Valley. He recently paid a visit to Los Angeles to "talk over" the situation in the Valley with his many friends.

* * *

Travis M. Kerr, formerly manager of field sales for the Lucey Products Corp. throughout the Mid-Continent has been appointed to take charge of all California sales, effective March 1. Mr. Kerr entered the corporation's employment in 1925 at Tonkawa, Okla. and after one year's experience was promoted to the field force.



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Mexican Oil Production Dropped 5,000,000 Barrels in 1929

By Valentine R. Garfias* and C. O. Isakson*

THE production of oil in Mexico during 1929 was approximately 45,000,000 barrels or 5,000,000 barrels less than in 1928. The decline which has continued for the last eight years has placed Persia very close to Mexico as fourth in rank among the oil producing companies of the world. It is even possible that Persia's production may have exceeded that of Mexico in 1929.

The production of the fields near Tampico showed a decline of over 10,000,000 barrels for both the light and heavy crudes, which was partially offset by an increase of over 5,000,000 barrels in the production of the fields in the Isthmus of Tehuantepec.

During 1929 the retrenchment policy followed by practically all the companies was continued and no material improvement should be expected until the unsatisfactory conditions which brought about this situation are remedied. A new administration has just assumed control in Mexico and as it should remain in power for six years, the progress of the oil industry during that time will depend primarily on the policy pursued by the new government with respect to oil development.

Development

During 1929, 214 wells were drilled as compared with 371 in 1928 and 583 in 1927. The percentage of producers in 1929 was 47.2 as against 34 per cent in 1928. The new wells did not show water as quickly as in 1928, particularly in the Cacalilao field where the greatest number of producers were brought in, their average initial daily production being 380 barrels. The flush daily production per well in the Southern Fields was 1730 barrels while the wells in the Isthmus of Tehuantepec came in with an average of 770 barrels. Development is summarized in Table No. 1.

In the Southern Fields 63 wells were drilled in 1929, 23 of which were producers, the best being drilled in Paso Real. This development tends to show that the southern extension of the Dos Bocas-Alamo fault from Alamo to San Isidro terminates at San Isidro.

TABLE 1

Petroleum Development in Mexico, 1929

	Failures	Producers	To- ta
NORTH FIELDS			
Panuco	23	12	35
Topila-Caracol	10	9	19
Chapacao-Corcovado	7	1	8
Salinas	3	2	5
Cacalilao	17	15	32
Limon	0	0	0
Altamira	2	0	2
Quebrache	1	0	1
Total	63	39	102
Southern Fields	40	23	63
Isthmus of Tehuantepec	8	39	47
Wildcats	2	0	2
Grand Total	113	101	214

TABLE 2

Petroleum Production in Mexico, 1928 and 1929

Fields	1928 Bbl.	1929 Bbl.	Increase	Decrease
Northern (12°Be.)	25,404,000	20,200,000	.....	5,204,000
Southern (21°Be.)	21,973,000	16,500,000	.....	5,473,000
Isthmus of Tehuantepec (32°Be.)	2,773,000	8,300,000	5,527,000	.....
Totals	50,150,000	45,000,000	.....	5,150,000

The two wildcat wells completed in 1929, one in Magiscatzin and the other in Xicotencatl, were failures and at the end of the year there were eight wildcat wells drilling and material was being hauled for two more.

Natural Gas

During 1929 natural gas from the Jennings Field in Zapata County, Texas, was piped to the City of). This line, which is 143 miles long, has an outside diameter of 13¾ inches and was placed in operation in October. Under the well-head pressure in the Jennings Field the line should have a flow of about 20,000,000 feet daily, which can be increased by artificial compression. This marks the first international transportation and marketing of natural gas on a commercial scale.

Production

Table No. 2 shows production in 1929 as compared with that of the previous year.

The production in the Northern fields during 1929 declined steadily in all pools from 57,300 barrels daily in January to 48,300 in December, the daily average per well in January being 114 barrels, and 82 barrels in December.

Production in the Southern fields increased from 45,000 barrels daily in January to 49,000 barrels daily in December, due to the bringing in of some good wells at Paso Real on the Alamo-San Isidro extension of the fault.

The most important development was recorded in the Tehuantepec fields, production having increased from approximately 7000 barrels daily at the beginning of the year to about 35,000 barrels in December. From present indications this production will be maintained easily and probably increased during 1930. Considerable activity during the year took place in the Northeastern part of the Isthmus, resulting in the discovery of the Tonala field, which promises to surpass the other producing areas in Tehuantepec (Fig. 1).

Oil in Storage

Oil stocks in Mexico increased about 1,500,000 barrels during 1929, mostly in heavy crude. Table No. 3 shows the total amount of oil in storage on Jan. 1, 1930, as compared with Jan. 1, 1929.

Exports

Total exports for 1929 were approximately 28,000,000 barrels, a decrease of 8,000,000 barrels from 1928. Of this decrease 2,000,000 barrels was in heavy crude, 3,000,000 barrels in fuel oil, 1,000,000 barrels in light oil and the rest in bunkers and distillates. Exports to the United States amounted to 19,000,000 barrels. Only six marine terminals were in operation during the year. Exports in 1929 are shown in Table No. 4.

Taxes

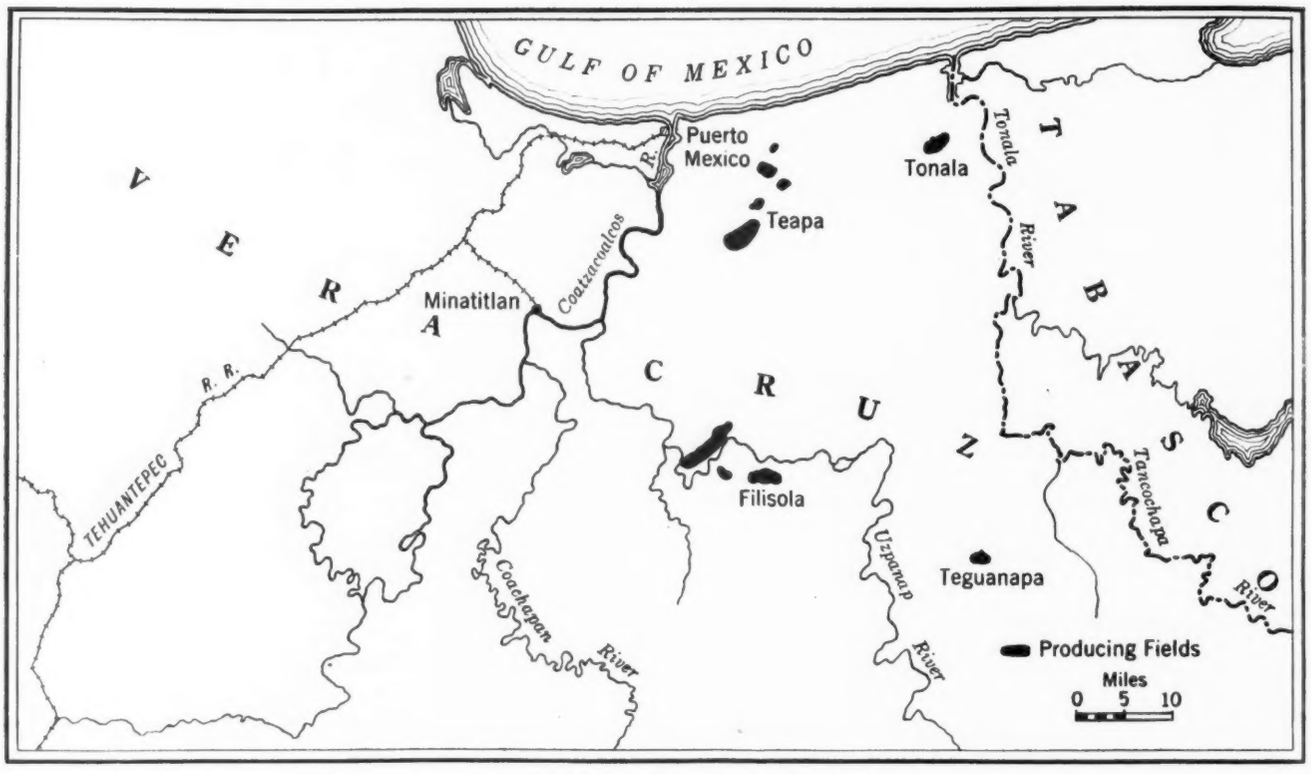
A new tax law went into effect in January, 1930, which based on the present prices of bunker oil results in a nominal reduction in taxes, while the new tariff law, which likewise went into effect in January, 1930, places duties on oil well and refinery material ranging from half a cent to two cents per pound. These new import taxes are in general considerably

TABLE 3

Mexican Oil Stocks, Jan. 1, 1929 and Jan. 1, 1930

	Jan. 1, 1929 Bbl.	Jan. 1, 1930 Bbl.
Heavy Crude (12°Be.)	6,500,000	7,550,000
Light Crude (21°Be.)	1,700,000	1,850,000
Topped (17°Be.)	5,700,000	5,850,000
Refined Products	900,000	1,000,000
Totals	14,800,000	16,250,000

*Foreign Oil Dept., Henry L. Doherty & Co., New York.



Map showing Tehuantepec Fields

higher than the former consular invoice tax of 5 per cent ad valorem which has been abolished.

Table No. 5 gives the taxes on oil exported, while Table No. 6 gives the total yearly export taxes paid to the Mexican Government since 1920. It will be noticed that high as the present taxes are in comparison to the market price of the crudes (the price of Panuco Crude has dropped about 50 per cent while the tax remains practically unchanged), the aggregate amount collected by the Government in 1929 was only about 10 per cent of the total it received in 1922.

TABLE 4
Exports of Mexican Petroleum by Grades, 1929

	Bbls.
Heavy Crude (12° Be.)	15,743,000
Fuel Oil (17° Be.)	3,762,000
Light Crude (21° Be.)	.....
Distillates (*)	5,427,000
Asphalt	1,706,000
Bunkers	1,106,000
Total	27,744,000

(*) Includes 1,588,000 barrels of Gas Oil.

Outlook for 1930

The outlook for 1930 for the fields near Tampico is not encouraging and there is no likelihood of new fields being discovered during the year, as the companies do not feel justified in starting extensive exploratory work under present conditions.

The Mexican oil industry should, therefore, continue during 1930 the general trend of the previous year; the gradual decline in the production of the fields near Tampico is to be expected as well as a moderate increase in the production of the fields in Tehuantepec. The over-all decline should be about the same or possibly less than during the previous year and the production for 1930 should, therefore, approximate somewhat in excess of 40,000,000 barrels.

TABLE 5
Mexican Oil Tax Rates, September, 1928 and 1929

Grade	Taxes, Dollars per Bbl. Sept., 1928	Sept., 1929
Heavy Crude (12° Be.)	$0.14	$0.14
Light Crude (21° Be.)	0.22	0.22
Fuel Oil (17° Be.)	0.19	0.19
Gas Oil	0.28	0.28
Refined Gasoline	0.27	0.27
Crude Gasoline	0.54	0.54
Refined Kerosene	0.16	0.16
Crude Kerosene	0.30	0.30
Lubricants	0.29	0.29

TABLE 6
Taxes Paid to Mexican Government on Oil Exported

Year	Taxes
1920	$22,740,000
1921	31,562,000
1922	42,990,000
1923	30,268,000
1924	27,311,000
1925	21,072,000
1926	17,411,000
1927	9,512,000
1928	5,633,000
1929 (estimated)	4,311,000
	$212,810,000

Small Oil Well Operation Is Meeting Topic

NEW YORK, March 24.—Economy in the operation of small oil and gas wells will be a principal topic for discussion by the eastern division of the American Petroleum Institute when it meets April 7 at the William Penn Hotel in Pittsburgh.

The afternoon session will hear a talk on the "Economical Operation of Small Oil Wells" by P. H. Curry, vice president, South Penn Oil Co., Pittsburgh, which will be discussed later by James H. Dye, sales manager, International Derrick & Supply Co., Pittsburgh.

Another talk during this session will be the "Economical Operation of Small Gas Wells" by H. H. Phillips, T. W. Phillips Gas & Oil Co., Butler, Pa., followed by a discussion by George Whitmer, III, American Natural Gas Co., Pittsburgh, and J. B. Bole, Leechburg Gas Co., Leechburg, Pa.

"Oil and Gas Reserves" completes the addresses of the afternoon meeting. It is by H. R. Pierce, of Dunn and Lewis, Pittsburgh, and it will be discussed by Dr. R. E. Somers, geologist, Gulf Oil Co., Pittsburgh; by Sylvester Rynearson, student, University of Pittsburgh, and Clark F. Barb, assistant professor of petroleum research, Pennsylvania State College, State College, Pa.

Other speakers and their subjects include:

"Storing of Gas, Natural and Artificial, in Old Oil and Gas Fields" by S. W. Meals, president, Carnegie Natural Gas Co., Pittsburgh, to be discussed by George E. Welker, president, United Natural Gas Co., Oil City, and J. H. Newlon, geologist, Philadelphis Co., Pittsburgh.

"Core Studies," by Eugene A. Stephenson and H. K. Ihrig, associated with R. E. Davis, consulting engineer, Pittsburgh. This will be discussed by Dr. Charles R. Fetke, Carnegie Institute of Technology; Richard D. Mayne, student, Carnegie "Tech"; Paul D. Torrey, consulting geologist, Bradford, and I. I. Gardescu, University of Pittsburgh.

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Old Leases Gain in Production After Sunday Shutdown Is Started

By Lawrence E. Smith
N. P. N. STAFF WRITER

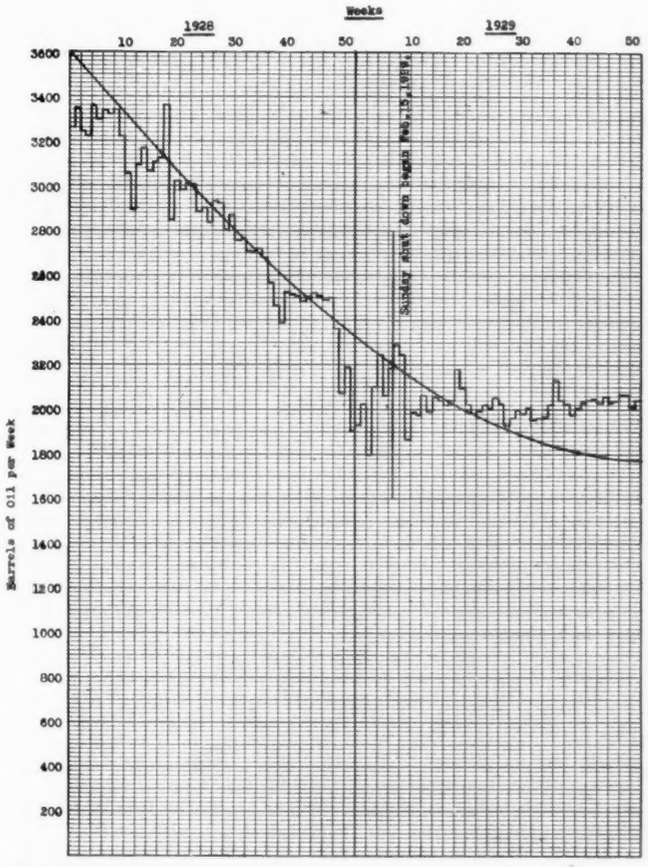
EVEN an oil well appreciates a rest on Sunday. A majority of the settled production leases of the Prairie Oil & Gas Co. that have been operated on Sunday shut-down basis for the past year have shown a gain in production. They not only made up on Monday and succeeding days the oil not produced on Sunday but exceeded what the company had a right to expect. The reason probably is, roughly stated, "rocking up," or increase in pressure in the drainage zone immediately surrounding the well because of gas shut in with the oil.

For some years the production department of the company in Oklahoma has contended that from an economic standpoint nothing would be lost in allowing pumps on old leases to remain idle on Sundays, giving the field men a day's rest as is done in most other industries. John A. Wolfe, general superintendent for Oklahoma, had been convinced for a long time that the plan was feasible.

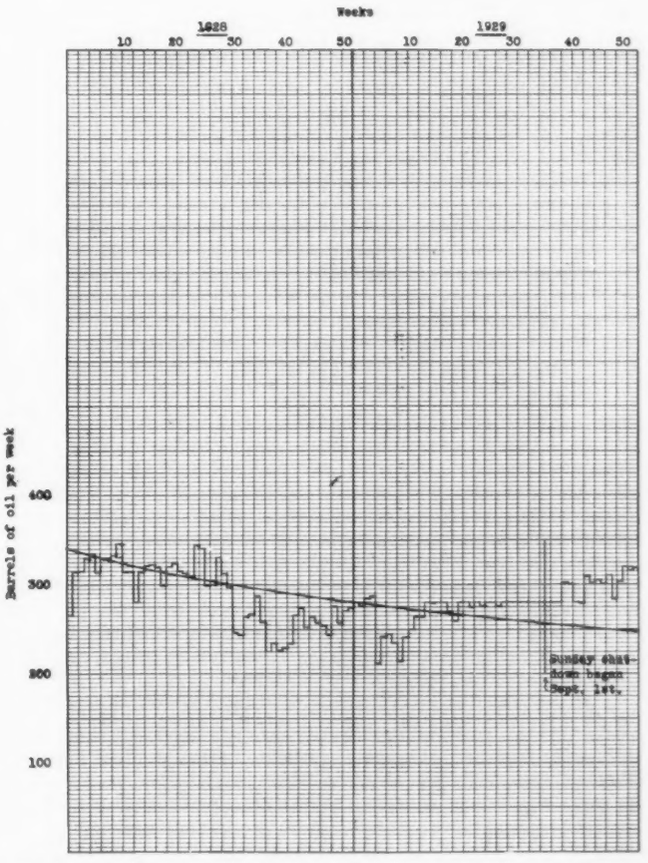
A little more than a year ago when Sunday shutdown was being urged for the flush areas of the state as a proration method, the Prairie and Barnsdall companies were first to announce that they would give it a trial. On the same day the plan was applied to Seminole production the Prairie shut down Sunday pumping on its 19 leases in the Burbank field of Oklahoma. This was on Feb. 17. One lease in the Glenpool was put on the same basis on July 7 and after Sept. 1, three more in the Cushing field. The 23 leases thus affected were typical of settled production except for two in the Burbank field which had been producing about one year each. More than 200 wells were included in the program.

Recently C. C. Carlisle, production engineer for the Oklahoma division, compiled production figures on the 23 leases. The weekly production graph of each lease was drawn on coordinate paper for the years 1928 and 1929. A production decline curve was determined for each lease by plotting on logarithmic paper the weekly production from the time of completion of the last well on the lease to the time of beginning the Sunday shut down, except in the case of the older leases where the curves covered a period of about four years. These curves were extended to the end of 1929 and were then transferred to the graphs previously drawn upon co-ordinate paper.

These curves and graphs showed the difference between the quantity of oil actually produced since the inauguration of the Sunday shutdown and that which should have been pro-



Production graph on Lease "M" of Prairie Oil & Gas Co., Burbank field, Oklahoma, with curve on decline rate. The property, southeast quarter of 21-25-6, *has* 13 *wells*



Productive history of Mabel Willis lease of Prairie Oil & Gas Co., South Cushing field. This is the south half of the northeast quarter of 11-17-7 *and has seven wells*

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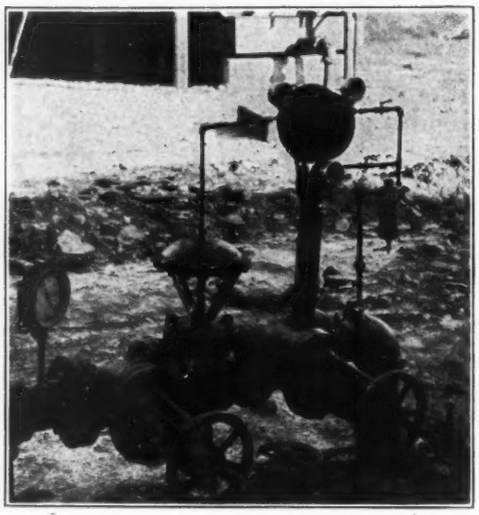

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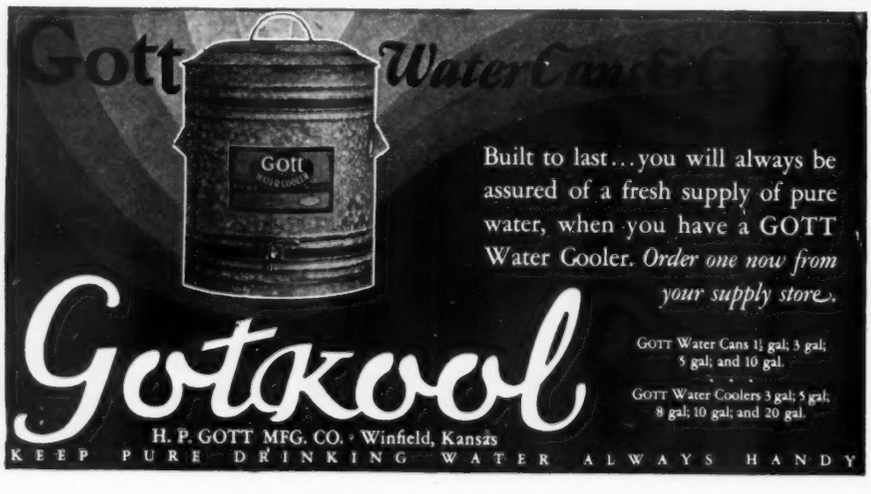
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duced had the wells been pumped all seven days of each week.

As previously stated, 16 of the leases showed a marked increase in production, one showed no effect and the other six a slight decrease. One of the latter class was unaffected for the first eight weeks following the beginning of the Sunday shut-down, then its production dropped nearly 9 per cent in one week but uniformly increased week by week until the end of 1929 when it had reached its former production. Apparently the temporary loss was not due to lack of Sunday pumping.

Another of the six is acting in similar fashion and has nearly regained its former producing rate. A third one showing a decrease was quite erratic in behavior prior to the beginning of Sunday shutdown, and while it showed a loss following the Sunday shutdown, its volume is almost constant week after week and will, apparently, appear above its former decline curve soon. The other three to show a loss were too new to plot decline curves with accuracy; they showed a loss, but they had not reached the settled stage.

Of the 16 leases which showed an increase, three are adjoining other leases where repressuring is being carried on, which might account for the increase on the three. The other 13, however, are too far away to trace their gain to neighboring repressure operations.

Two of the graphic representations of lease performance are reproduced herewith. One of them is in the Burbank district and the other in the Cushing pool.

Oil Treating Is Topic At Seminole Meeting

SEMINOLE, March 19.—The merits and demerits of the bottom hole introduction of the chemical in the treatment of oil field emulsions were the chief topics of discussion at the March meeting of the Seminole chapter of the American Petroleum Institute, Division of Production.

The introduction of the chemical used to break down the emulsions at the earliest possible moment has led to the putting it into the air or gas stream used to flow the wells.

Those who favor the force feed type of lubricator for the introduction of the chemical into the hole maintain that the pumps, by virtue of the savings in chemical which they effect, are as economical in the long run as the line pressure type.

A practice followed by one company using the force feed type is to have the small steam engine or motor used to provide the reciprocating motion needed to actuate the pumps housed at the boiler or compressor house. A one-inch line is laid up to the well head, and buried below the frost line.

Are Structures of Southwest Oklahoma Deep Seated or Superficial?

By William F. Lowe
N. P. N. STAFF WRITER

TULSA, March 22

BEHIND the current land play in southwestern Oklahoma lies the hope that deep production will warrant the investment. Many operators feel that the basic structures in that part of the state are similar to those found at Garber and Oklahoma City and that they will not be much deeper. Others are not so optimistic but are following the move in order to be in at the kill if the idea works out. It is entirely possible that these conditions may be found but there are certain geologic features which do not support such a conclusion.

The discovery of a slightly deeper pay in the old Cement field of Caddo county has led to the deepening of several former producers. Recently, the No. 6 Caddo-Rowe of the Magnolia Petroleum Co., SE NE SW NE, 36-6-10W, found this new pay from 3302 to 3327 and the daily average for the well was boosted from 150 barrels to 850 barrels.

In the same section, this company failed to find the lower horizon productive in its No. 3 Niles and is drilling ahead at 4200 feet in the Pennsylvanian. Two wells of English et al., the No. 1 Melton, 36-6-10W and the No. 3 Anderson, 31-6-9W, found oil in the lower sand, the former from 3474 to 3495 and the latter from 3298 to 3320 and from 3334 to 3346.

Seven other wells are drilling though not all of these are new wells, and it is quite probable that more will rig up to deepen in the near future. The Cement anticline seems to have taken on a new significance and the idea that it may be possible to find Wilcox, or even Siliceous lime production, on the same structure has taken hold in rather a big way.

The conclusion is due only in a small part to the Magnolia well for there is nothing about its deeper sand to encourage such an idea. It is still thought to be in the Permian, though it may be in the conglomeritic zone found at the contact of this formation with the Pennsylvanian beds below. In any event, the presence of a normal section between it and the Wilcox or the Siliceous lime, would necessitate drilling at least 6000 feet deeper to reach these desired pays. It is possible to reach these great depths but it is not entirely feasible under present conditions.

The operators are hoping that great thicknesses of these sediments may have been eroded from the tops of the subsurface folds just as they have been elsewhere. (See Fig. 1.) In other words, structural conditions similar to those of the Oklahoma City pool are thought to exist. Here, as in other pools of the state, the pre-Pennsylvanian beds were almost entirely removed from the crest of the ridge which supports the structure. Thus, the Arbuckle or Siliceous lime of Ordovician time lies immediately below the Pennsylvanian, with pays from 6200 to 6400 feet from the surface. Such producing horizons are comparatively easy of access. However, there is no evidence as yet to indicate that a similar condition exists on the Cement structure.

Most of the optimism in southwestern Oklahoma is based on the supposition that the known folds are of deep seated origin. Their proximity to the Wichita mountains has led to the belief that they are a part of that great uplift and have the same granite core. There are, in all probability, many folds in the area that do have such an origin but there is no way of telling at the present time which ones have the hoped for base.

In Caddo and Grady counties there is a question as to the existence of any such folds. The Cement anticline of the former and the structure upon which the Chickasha gas field is located in the latter, may or may not be such structures. Their position near the mountains gives them the appearance of flank folds. If they are, it is reasonable to suppose that they were subjected to a portion of the long erosional period which reduced the mountains to something like their present level.

The result of such a period on the paralleling folds would be to remove most of the lower beds from the top of the granite centers. This would place the older pay horizons within easier reach of the drill, and

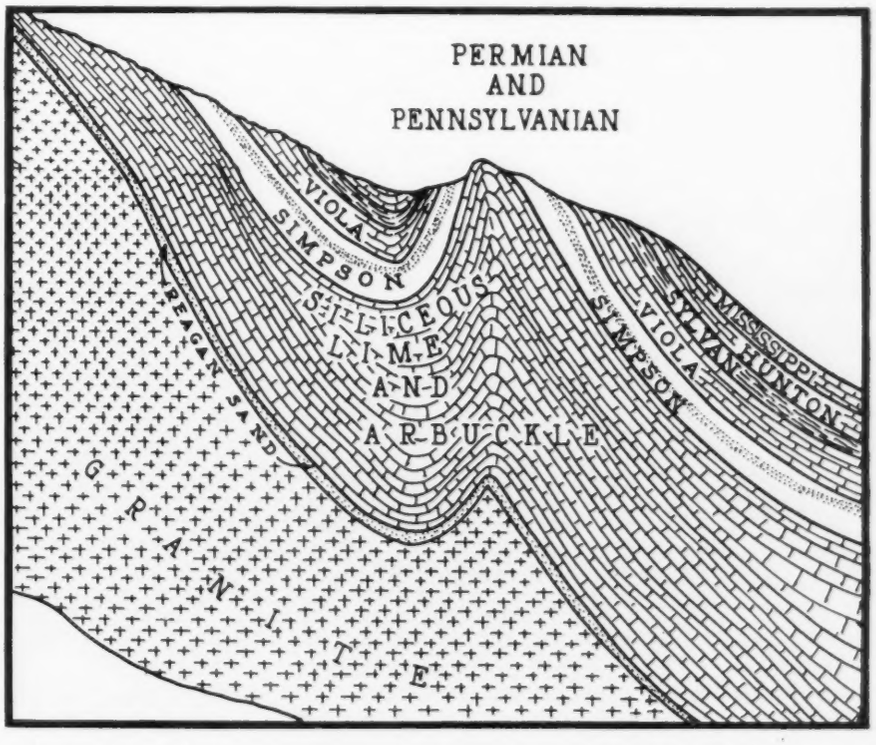

Fig. 1—Generalized cross-section of the northeast side of the Wichita mountains showing what operators hope to find as a base for the Cement anticline and other structures in the region

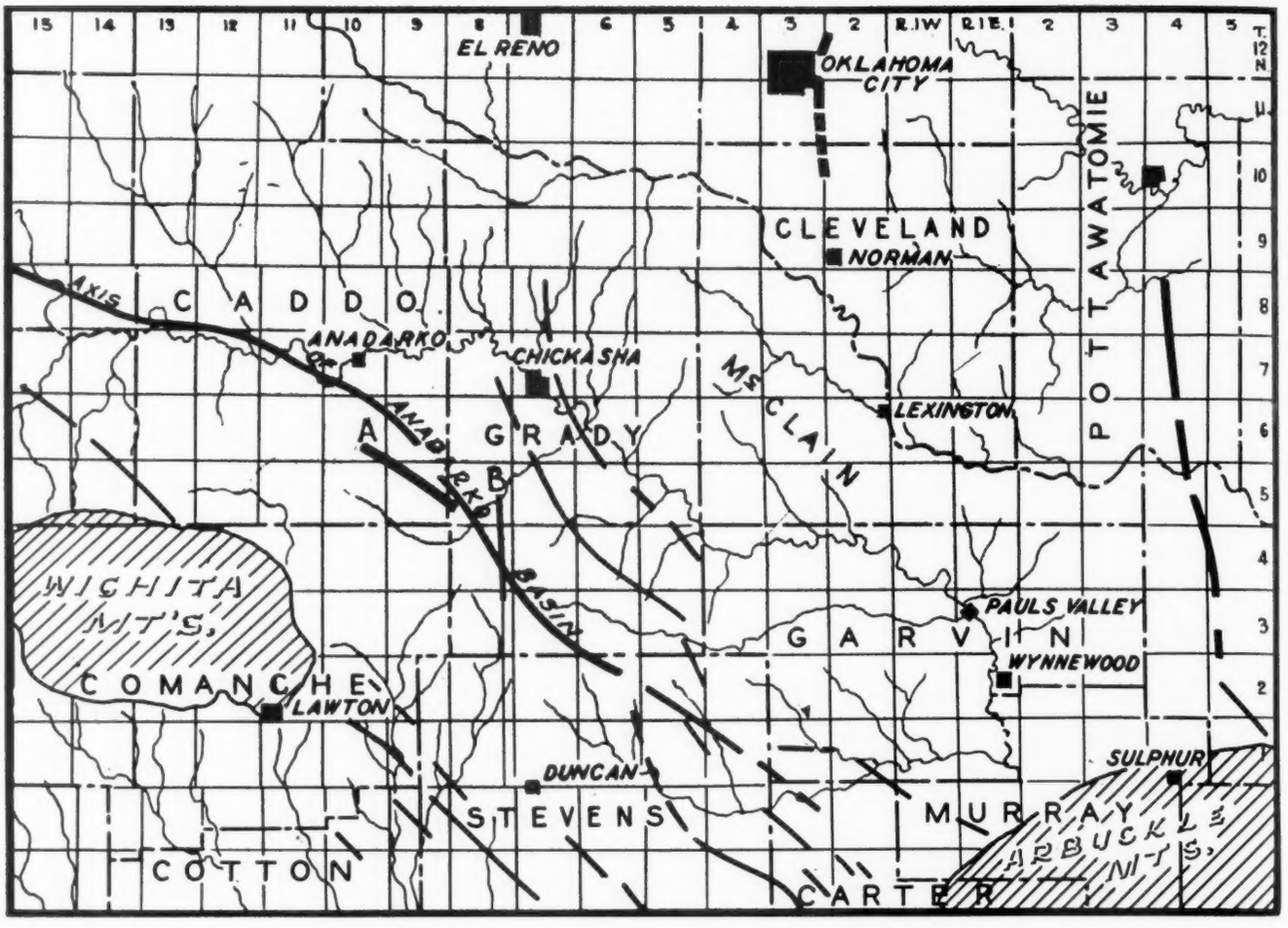

Fig. 2—Map showing major structural features north of the Wichita mountains in southwestern Oklahoma. In Caddo and Grady counties, lines A and B represent the Cement anticline and the Chickasha fold respectively. The Hunton Arch is shown on the right

therein lies the hope which is prompting several deep tests in the region.

It has been thought that there were structures of this type in Stephens county along the southeastern extension of the Wichitas, for wells have logged the Arbuckle at 3300 feet and the Simpson at 3100 feet. These wells have encountered only a small fraction of the normal section between the Ordovician and upper Pennsylvanian. The missing formations may have been eroded away or were not deposited though the latter view seems to be the most logical, for there are no wells in the county, regardless of their position, that have found a complete section.

Among the more important Arbuckle tests in the county are the Comanche Petroleum Co., No. 4 Wilson, 19-2S-7W, which found this formation from 3410 to 3635 total depth. Further west and still on the extension of the uplift, the Amerada Petroleum Corp., No. 10, 32-1S-8W, logged Arbuckle from 3367 to 3600. Two wells that are bottomed in the Simpson, finding it at 3625 and 3184 respectively, are the Joe Cook well, in 17-2S-6W and The Texas Co., in 19-2S-6W. Both had water in this formation.

Perhaps the most interesting well in the immediate vicinity of the Wichitas is that of the Wirt Franklin Petroleum Corp., in 4-5N-9W. At least it throws some light on what may be expected in the area where the deep production is being sought. This well topped the Pontotoc, a conglomerate that is usually considered to be upper Pennsylvanian, at 2503 and when shut down to abandon, was still in the latter formation at 5720.

Though it has not passed through the Pennsylvanian, it indicates an enormous thickness of those beds. Some of this may be accounted for if, as thought by many geologists, the well is located in a saddle between the Cement anticline and the structure on which the Chickasha gas field of Grady county, was found. Certainly it appears to be off structure. Even so, it does not offer much encouragement unless there is relief below in the form of erosional removal on the structures.

It will be noted on the accompanying map that the two structures mentioned above, do not have the same trends. The Cement anticline parallels the NW SE trending axis of the Wichitas, while the Chickasha fold has more of a north and south position.

This fact has led to a difference of opinion regarding their relative ages. The latter has a trend more like the granite ridges below the Oklahoma City and Garber pools. It parallels the Hunton arch and may have originated at the same time, yet it is so close to the Wichitas that this seems hardly possible. If such is really the case, then it offers better opportunities for deep exploration than its neighbor.

At any rate, the idea is fairly well accepted that the folds in the southwest of the state are younger than those to the northeast. The geologic history of the latter as structures began in early Pennsylvanian. At this time, the Hunton Arch and the other granite ridges of both Oklahoma and Kansas were formed. They owe their existence to the same forces, and the great uplift which accompanied their formation made of them land masses in the early seas. A long period of erosion followed before they were submerged again.

The Arbuckle uplift seems to have come in late Pennsylvanian time and still later, possibly partly in early Permian, came the major uplift of the Wichita mountains. From all of these elevated masses and also from the ancestral Rockies, great quantities of material were washed into the

Anadarko basin. Deep seated folds in this basin that may have been formed with the uplift of the mountains, were buried deeply beneath an enormous mass of sediments. Whether these folds were elevated above the sea and subjected to a long erosion previous to their being covered, is still a matter of speculation.

The dip away from the mountains, particularly on the north or basin side, is decidedly steep. An illustration of this is found in Kiowa county. Here the Malornea Oil Co., No. 1, 35-7-15W, found pre-Cambrian rocks at a depth of 435 feet, while four miles west, Johnson et al. in 6-6-15W, logged almost the whole section, topping the Hunton at 1070 and the Simpson at 2678. If this extraordinarily steep dip prevails in the neighborhood of the Cement anticline, it is reasonable to suppose that even as a deep seated fold it might never have been elevated above the sea.

Another explanation is offered by geologists regarding the formation of the Cement and similar structures in southwestern Oklahoma. It is definitely known that there was considerable thrusting in the Wichita mountain area subsequent to the major uplift. Whether this was due in part to the increasing weight of the sediments accumulating in the basin is a question. It is, however, a reasonable conclusion, for the movements are toward the north. Such movements would result in the formation of folds in the basin beds, though there is plenty of argument as to whether these would be deep seated or merely superficial.

If they are but superficial structures and confined to the upper beds they are not, as hoped by many operators, the reflection of deeper folding. This would practically eliminate the possibility of production from the Wilcox or the Siliceous lime by placing these formations too deep for profitable development.

Drumright A. P. I. Chapter Hears Talks on Oil Treating

By John Power
N. P. N. STAFF WRITER

DRUMRIGHT, March 27

SOLUTIONS to many oil emulsion treating problems lie in the correct application of the theories of oil treating to the problem at hand. This point was stressed to the 149 men who attended the regular monthly meeting of the Drumright chapter of the American Petroleum Institute, Division of Production, held March 18.

Two speakers on treating oil emulsions, and one on bolted steel tanks occupied the program. The oil treaters were Paul L. Guarin, Shell Petroleum Corp., and R. R. MacDonald, Shaffer Oil & Refining Co. J. S. Warren, of the Maloney Tank Manufacturing Co., was the spokesman for the tanks.

In general, the speakers were in accord on the various points they brought out in their discussion. The ideal treating plant, they said, was one which would make pipe line oil out of a given emulsion with the least overall cost. Given conditions where several methods of treating oil would prove satisfactory, the cost should be the deciding factor in determining which of the several methods should be installed.

A great many factors must be taken into account in determining the overall cost of treating the bad oil, they said. The cost of the chemical; or the fuel, in methods where heat is employed; or the initial cost of installation, were but items bearing on the total result. A saving effected in one might run the cost up on another, or impair the efficiency of the treating system to a point where the cost per barrel of the oil recovered would be higher than the partial saving would justify.

On leases having a large production, and a considerable amount of bad oil to treat, the erection of an elaborate plant, having a relatively high first cost and a low operating cost, is often justified. On the other hand, there are many leases with extremely limited production, where it would be impossible to return the investment needed for such a plant over the expected life of the property.

In discussing the first situation, that of a lease justifying a comparatively high initial cost for the treating plant, the first speaker, Mr. Guarin, stressed the necessity of installing a settling tank large enough to handle the throughput of oil. Too small a tank, he said, necessitated the raising the oil to a temperature where the gravity might suffer.

The majority of plants, especially those where the treating required more work than merely giving the dirt and water a chance to settle out, are a combination of one or more of the various treating methods, said Mr. Guarin. One of the most common combination methods is that where both heat and chemicals are used to treat the emulsion.

In the introduction of the chemical, the efficiency of the mechanism used to introduce the chemical plays a big part in the cost of the chemical. Although the familiar type of line pressure lubricator is cheaply built easily installed, and lasts a long time, it nevertheless has a weak point which he said made him consider it unsatisfactory for jobs where any great amount of emulsion was to be handled.

The line-pressure type lubricator does not function steadily under all atmospheric conditions. A drop in temperature will change the rate of flow of chemical through the sight feed to such an extent as to shut off altogether the introduction of the chemical. Likewise, a rise in temperature will increase the rate of flow to a point where too much chemical is being introduced, thus causing a loss.

It was pointed out that the drilling contractor, using lubricating oil costing around 40 cents per gallon, had found the line pressure lubricator (or the "boll weevil," as it was more or less affectionately known by those who have been sprayed by a solution of live steam and lube oil) to be uneconomical. The force feed lubricator now lubricates the steam engines, and if, it was argued, the force feed lubricator is economical on 40 cent oil, it surely would pay its way on a treating chemical costing better than $2 per gallon.

But here again the small lease was declared a law unto itself. The life of the force feed lubricators have been found to be around two years, although many are in service which have been in operation for three years or so. On a small lease, with but little oil to treat, and a not too long expected life, it would not be sensible to install the force feed type of lubricator. It might, under small production conditions, be more economical to use a little more chemical per barrel, and keep the capital investment as low as possible.

R. R. MacDonald, emulsion treater for the Shaffer Oil & Refining Co. described in detail several of the methods commonly used for treating oil. Proper diffusion of the oil into the settling tank was a point he particularly stressed.

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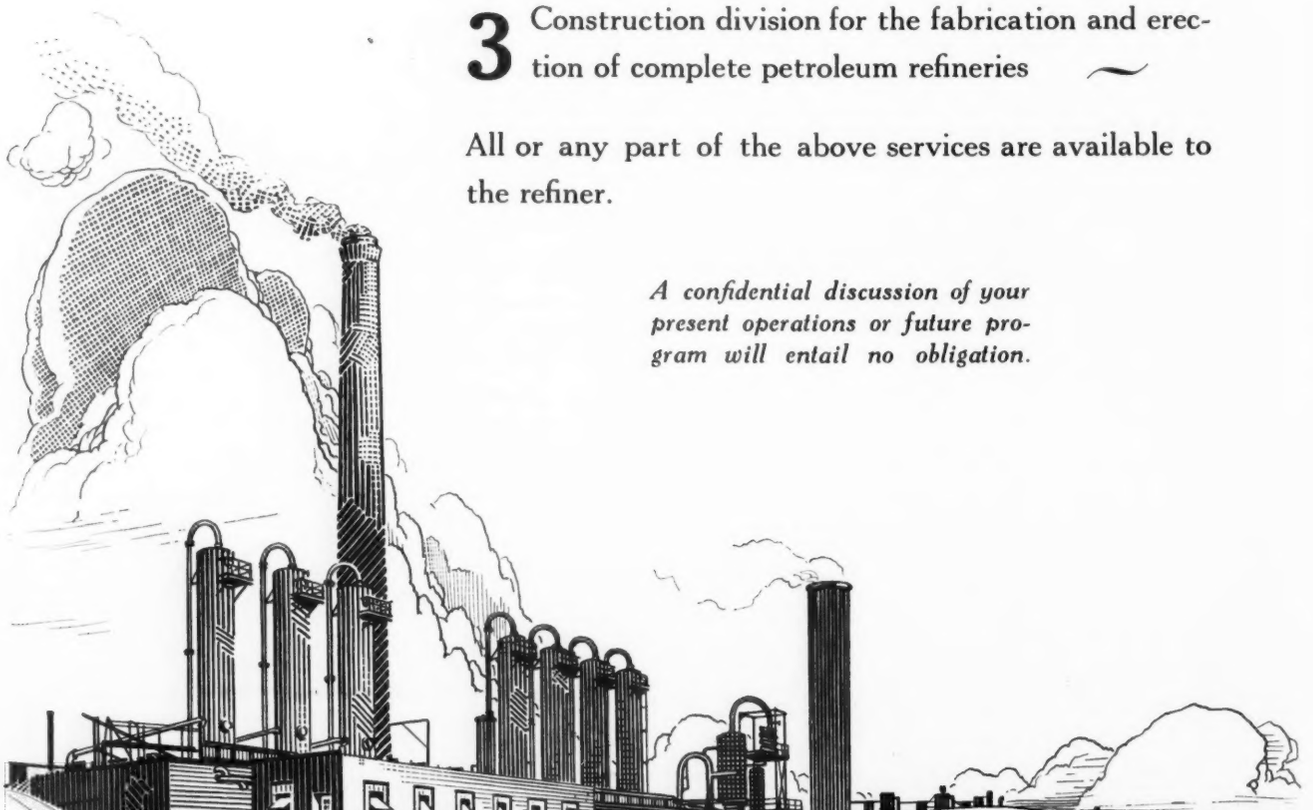

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Modern Refining — Science and Practice

By Colonel George A Burrell*

Corrosion of Refinery Equipment

Article 17

Action of hydrochloric acid, hydrogen sulfide and sulfur; Results of using special corrosion resisting materials; A simple and effective method of purifying gases containing hydrogen sulfide

THE principal corrosion agents in refining practice are hydrochloric acid, hydrogen sulfide, free sulfur, moisture and the oxygen of the air. Hydrochloric acid forms from salts like magnesium chloride and calcium chloride that are contained in emulsified water in the crude oil. Chlorides undergo hydrolysis under the action of heat to produce the acid, thus,

$$MgCl_2 + H_2O = Mg_2\ OCL_2 + 2HCl$$

There is much difference in the amount of salt water in oil strata. Born[1] notes that Pecos County (Texas) crude oil contains a negligible amount of salt water; about 10 barrels of sodium chloride per 1000 barrels of water with no magnesium or calcium chloride, while Panhandle or Armarillo crude oil contains as much as 447 pounds per 1000 barrels of crude oil, a large percentage of which is present as calcium or magnesium chloride.

Meade[2] finds it difficult to remove the chloride from crude oil, particularly from the paraffinic ones, because there appears to be a protective coating of wax around each crystal of salt, but that the oil can be filtered at a slightly elevated temperature at a cost of 1 or 2 cents per barrel. Soluble salts, like sodium and magnesium chloride, can be washed out with hot water, but the expense is large and emulsions are apt to form.

Dry hydrochloric acid gas itself does little damage, but dissolved in water it becomes corrosive, particularly where vapors begin to condense in a condenser.

Gaseous or aqua ammonia is used to combat hydrochloric acid corrosion. It is introduced into condensers in amount a little more than the HCl equivalent. An occasional washing with hot water is given the coils to remove ammonium chloride.

Hydrogen sulfide present in charging stock is a potent cause of corrosion. The gas itself does little damage below 500 F., unless velocities are high. This is probably due to the fact that at high velocities a protective coating of scale is scoured off the bare metal, leaving same active for further corrosion. At low velocities this scouring action does not occur. If oils can be processed at comparatively low temperatures, as in simple topping operations, or in vacuum distillation, its effects can be minimized. But it oxidizes to free sulfur,

$$2H_2S + O_2 = 2H_2O + 2S,$$

and the sulfur is corrosive, combining with practically all metals to form sulfides. Sulfur also oxidizes to form SO_2, which in water forms sulfurous acid.

Hydrogen sulfide begins to decompose to form sulfur and hydrogen at about 400 C. (752 F.), hence this action also takes place in cracking stills.

Retaillian and Lang[3] found that at 864 F. hydrogen sulfide was almost completely decomposed forming free sulfur, thus,

$$H_2S \rightleftarrows H_2 + S,$$

the sulfur then reacting with the iron, thus,

$$Fe + S \rightleftarrows FeS.$$

They add that there might also be a direct attack on the iron by the H_2S. Further, that the following reaction might occur,

$$FeS + H_2 \rightleftarrows Fe + H_2\ S,$$

the three reactions reaching equilibrium which prevents the free sulfur from completely reacting with the iron. Their conclusion is that free sulfur has a greater corrosive action than any other reagent they tried.

The total percentage of sulfur in a crude oil may not bear any relation as to the corrosiveness of an oil. It is when the sulfur is present as hydrogen sulfide or as free sulfur, or these substances form, that the oil becomes corrosive. Sulfur present as thiophene sulfur does no damage for even at cracking temperatures thiophenes do not decompose, according to Faragher and Morrell.

Deposits of elementary sulfur due to oxidation of hydrogen sulfide, are often found in refinery equipment. They should be removed wherever practical, else the sulfur will combine with iron to form iron sulfide, corroding the equipment. This formation is very rapid on run down lines and tanks in handling sour Texas oils. It also forms on the roof of storage tanks.

Pieces of corroded tank tops frequently fall to the bottom of a tank setting up corrosion there. What happens is that iron sulfide scale drops from the roof to the bottom in acidulated water which has settled out of the oil. The two different metals, iron sulfide and steel, in contact with each other, provide a galvanic couple and electrolysis begins.

Substances other than ammonia, like hydrated lime, caustic soda and soda ash are introduced into charging stocks of pressure stills[4] to lessen corrosion. Lime exercises a triple function. It lessens corrosion, somewhat reduces sulfur in finished gasoline, and mixing with coke prevents the latter from binding together too closely, or adhering too tightly to reaction chambers or tubes. A disadvantage is that concentrating itself in the coke it raises the ash content

[1]Before Am. Pet. Inst., Chicago, Ill., Dec. 5-8, 1927.

[2]Before Am. Pet. Inst., Chicago, Ill., Dec. 5-8, 1927.

*Consulting Chemical Engineer, Pittsburgh, Pa.

[3]Before Am. Pet. Inst., Chicago, Ill., Dec. 5, 1929.

[4]In straight refining operations also.

of same unduly high, or mixing with residuum, covers heating tubes of furnaces with lime when the residuum is used as fuel, and thus reduces heat transfer.

Salt can be washed out of exchangers by circulating hot water. Steam can also be used. Scale frequently forms on the water side of oil to water exchangers where oil vapors enter the exchanger and hot water leaves same. If the water temperature is under 150 F. the scale is soft and can be easily removed.

One company charges caustic soda to the still (48 pounds per 10,000 barrels), injects anhydrous ammonia into the vapor lines (1 pound per 3000 barrels of charging stock), and washes the gasoline stream with lime. Another company injects aqua ammonia (25 pounds NH_3 per 1000 barrels of charging stock) into its pipe stills. However, Faragher notes that some refiners have stopped the injection of caustic soda, soda ash and lime because the cost of replacements are less than the cost of the neutralizers.

Cast iron resists corrosion to a considerable extent but it lacks strength, hence cannot be used for pressure or high temperature work. It is mainly used for condensers, particularly where sea water is the cooling medium. Even so the condensers may rapidly corrode in less than a year's time, although this is exceptional.

Corrosion and acid resisting metals find large use in a refinery. These are iron, lead, chromium, nickel, copper and aluminum, and their mixtures and steel alloys containing them.

Iron pumps resist 66 degrees sulfuric acid, and brasses and bronze valves, pipes and fittings resist dilute acid. Admiralty metal is excellent for heat exchanger construction where temperatures do not exceed 400 F.

Lead resists cold sulfuric acid of all strengths up to 95 per cent and hot acid of strengths up to 80 per cent. Antimony lead is sometimes used because it is stronger than chemical lead. However, it is difficult to keep lead tight against steel plates.

Aluminum is readily attacked by alkaline substances, although the addition of small quantities of sodium silicate or potassium dichromate greatly retards this action. Ammonia gas does not attack it except in the presence of steam at high temperatures. Sulfur, sulfuric acid and sulfur dioxide do not attack aluminum except at high temperatures, and dilute or strong sulfuric acid do not attack it at ordinary temperatures.

Aluminum bids fair to come into wide use in the petroleum industry. Extensive tests are now being made on tanks, tank roofs, columns, column plates, etc. with favorable results. Bignell[5] has reported tests on the ability of aluminum tanks to resist corrosion by the high sulfur West Texas crude oils, with their high brine content.

Two tanks, one constructed entirely of aluminum, and the other of aluminum for the deck and upper ring, but with steel for the bottom and lower ring, have been used for storing oil. After one year no corrosion existed except for iron sulfide falling to the bottom from steel bolts used to fasten a pressure gauge in place, and from a steel gauging well. Steel tanks protected by aluminum foil bid fair to come into extensive use.

Pure nickel is fairly resistive to acids, alkalis and salts. High nickel-chromium alloys containing 80-85 per cent nickel and 20-15 per cent chromium are widely used for their resistance to oxidation and sulfur compounds at high temperatures. Monel metal containing 60 to 70 per cent nickel, the balance principally copper, is resistant to acids and alkalis, and is widely used in the chemical industries. A wide range of nickel-chromium-iron alloys contain 60-35-22-18-8 per cent nickel and 10-20 per cent chromium. They markedly resist air oxidation at high temperatures, have good mechanical properties and resist oxidizing agents and some acids. Copper-nickel alloys of 35-45 per cent copper and small amounts of other metals are used to make corrosion resisting alloys and the same alloy, but 20-30 per cent nickel, is used to make condensers.

Chromium-steel alloys as a whole are resistant to oxidizing agents in general, sea water, fresh water, sulfur compounds (not sulfuric acid) nitric acid and alkaline solutions. High carbon chromium steel alloys are wear resisting and hard. Mild ones have high tensile strength and are tough. Another class has lower tensile strength but is more ductile and particularly resistive to corrosion. Chromium-nickel steel tubes for pressure still work resist oxidation and corrosion, but brittleness of tubes has developed in some cases during cleaning. It is said that the new Enduro alloy is free from this defect.

Duff[6] notes that in tests conducted by the American Petroleum Institute, plain carbon steel lost as much as 54 per cent of its weight after 1031 hours exposure in a cracking still, while an 18 per cent chromium—8 per cent nickel steel gave the best results. A 17 per cent chromium—7 per cent nickel—2¾ per cent aluminum alloy resisted corrosion, but became brittle. The chromium content up to 20 per cent in straight chromium steels progressively increased resistance to corrosion.

At one time some reaction chambers of Dubbs cracking units, operating on sour California oil, were chrome plated, and likewise, plugs, return fittings, pyrometer wells, etc.

Steel alloys of high chromium and nickel content, and lead, aluminum and copper are expensive, hence there is a definite place for cheaper alloys, steels, containing small amounts of copper, nickel, chromium, etc. Steel containing 1 per cent of copper is much used in oil lines and other piping where wet earth is encountered or where lines are laid under water. A large amount of tank steel contains 0.25 per cent of copper and although only costing 5 per cent more, lengthens the life of the plates several times.

Some steel contains 0.5 to 1.0 per cent copper and 1 to 4 per cent chromium and some silicon, and some contains 2 to 5 per cent nickel, or small percentages of molybdenum or aluminum. All of these alloys are cheaper than the high alloy ones and partake in some degree of the properties of the former, and are useful where mild corrosion exists. Further, they have high tensile strength and fabricate well; roll, weld, draw, punch, cut, etc.

Glass is much used in some industries where corrosion resisting substances are needed. High temperature resisting and strong glass is made, of which pyrex is an example. Glass has a heat transfer value of about 40 per cent of that of copper, and is already much used for condensers, coolers and heat exchangers. Glass resists corrosion and is transparent, hence its attractiveness.

Calorized tubes are steel ones, with a protective coating of aluminum oxide. They last 4 to 6 times as long as ordinary steel so long as the coating is intact, but tube cleaners remove the coating. Some tubes are double calorized for pressure work. For the outside of tubes and for fire box supports and fixtures calorizing does very well. Many calorized tubes were introduced into the industry at one time in which the calorizing had not been well done or for uses for which they were ill adapted, hence in some cases they earned a poor reputation.

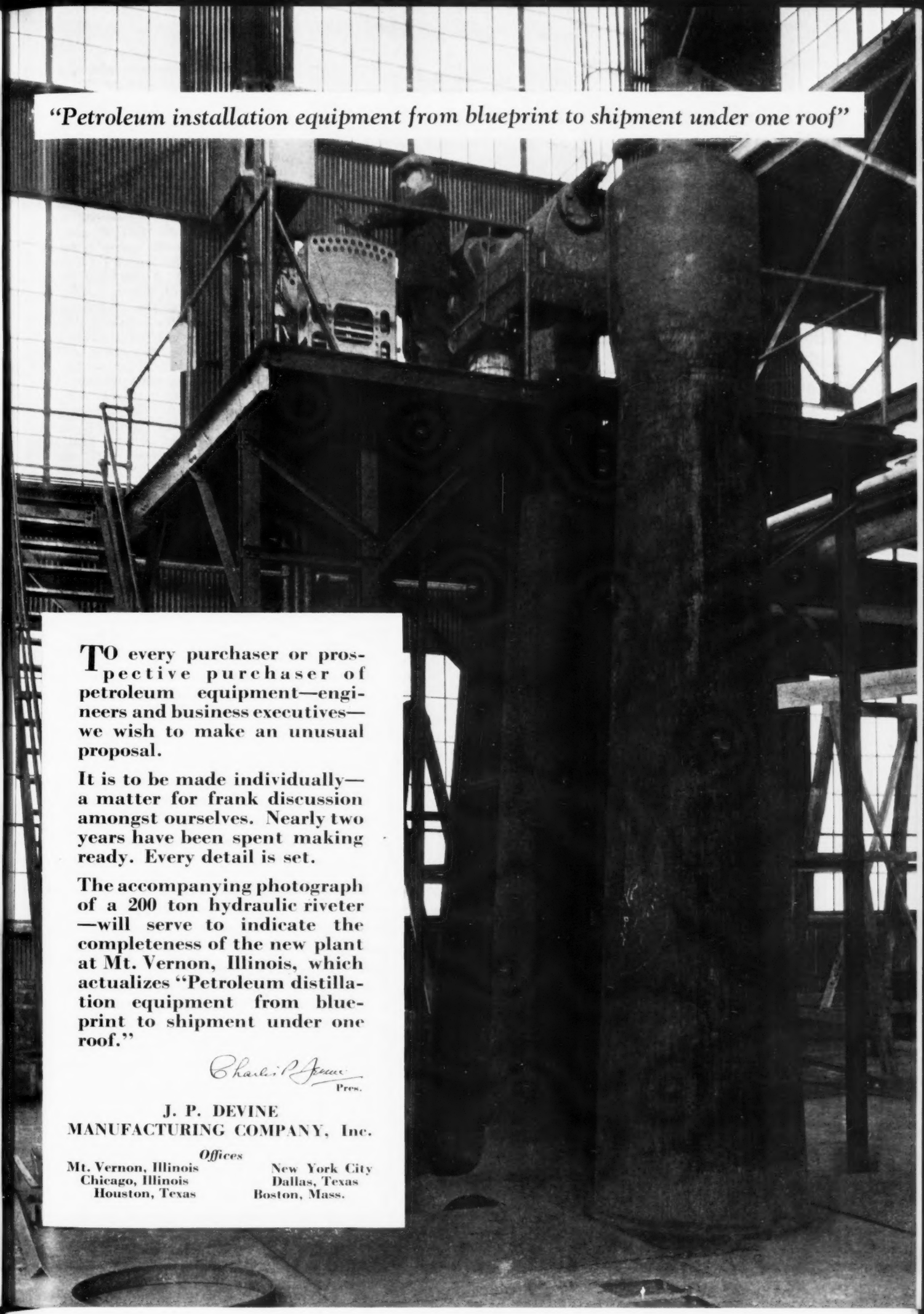
Some reaction chambers are today lined with ganister, a refractory lining with a fireclay base. One mixture contains Portland cement, sand and firebricks and is applied with a cement gun to a thickness of ½-inch, and is reinforced by expanded metal lath. For utility and cheapness this expedient seems to be one of the best so far evolved for protecting reaction chambers. J. C. Morrell of the Universal Oil Products company has been particularly active in developing such mixtures and has met with much success with them.

Finney[7] adds sodium dichromate to condenser water to lessen corrosion. Two pounds of the chromate are used per 1000 gallons of water. Corrosion is practically inhibited. This expedient followed several ineffectual

[5]Oil & Gas Jour., 28, 38, 1929.

[6]Before Am. Pet. Inst., Chicago, Ill., Dec., 1929.

[7]Am. Inst. Mg. & Met. Engrs., N. Y. meeting, Feb., 1926.



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ones. Chromates have long been added to boiler waters. They are said to induce a passive condition by the formation of a protective film.

Wilson and Bahlke[8] submitted various alloy steels and metal to corrosion in a condenser from hydrochloric acid, hydrogen sulfide and other sulfur compounds in the oil and concluded that hardened stainless steel, nickel-chrome steel and block tin stood up very well, with some bronzes nearly as good. Wrought iron and steel were poor. Heavy cast iron condensers, lines and valves, and with the latter trimmed with some of the more resistant alloys was, in their opinion, the best solution of the problem.

Surfaces are frequently sprayed with molten metals, lead, zinc, chrome-steel, aluminum, tin, etc. to protect them from corrosion. Still bottoms have been sprayed with aluminum with success. The Metals Coating Company, of Philadelphia, Pa., informed the writer that spraying with lead, zinc or aluminum costs 25 to 35 cents per square foot, including sand blasting, when large areas are coated. Coatings of chrome steel cost more because of the higher melting point of the metal.

Purification of Hydrogen Sulfide Gases

The purification of hydrogen sulfide gases presents a problem in those cases where the hydrogen sulfide content is high. Water may be used under pressure in a good absorption column. The gas is soluble in water to the extent of 300 per cent at 60 F. and atmospheric pressure. At 100 pounds the solubility, following Henry's law directly, is about 2100 per cent, but if the gas contains 10 per cent of H_2S, the solubility becomes 210 per cent at 100 pounds, according to Dalton's law of partial pressure; or 1 volume of water dissolves about 2 volumes of gas.

Thus if 1,000,000 cubic feet of gas per day are to be treated, containing 100,000 cubic feet (10 per cent) of H_2S, there will be needed, at 100 pounds pressure, 50,000 cubic feet of water of 60 F. temperature. This is about 400,000 gallons of water per day. After use and upon release of pressure, the water will give up 85,000 cubic feet of the gas to the atmosphere, retaining 15,000 cubic feet. The water has to be handled at high pressure, requiring 120 pounds of steam per horsepower hour, or 60 boiler horsepower. The gas must be raised to a high pressure, requiring 160 horsepower in a gas engine.

The higher the temperature of the water, the more water must be used. Upon release of the gas from the water a considerable amount of poisonous gas must be disposed of. This can be done by putting the charged water through a separator at atmospheric pressure and disposing of the gas by burning it.

A water solution of caustic soda provides a good absorbent for hydrogen sulfide when the latter is present in small quantities. Otherwise the cost is high. Caustic soda combines with hydrogen sulfide, thus,

$$H_2S + NaOH = Na_2S + H_2O,$$

or 0.8 cubic feet of hydrogen sulfide needs 0.090 pounds of caustic soda, and a million cubic feet of gas per day of one per cent hydrogen sulfide content needs 1100 pounds of caustic soda per day. At 3 cents per pound the cost is $33 per day.

Lime water combines thus,

$$Ca(OH)_2 + H_2S = CaS + 2H_2O$$

or 0.8 cubic feet of H_2S needs 0.17 pounds of slaked lime. One million cubic feet of gas per day of 1.0 per cent H_2S content needs 2100 pounds of slaked lime per day. On a practical scale the Burrell-Mase Engineering Co. has found that 2,500,000 cubic feet of refinery gas of 1 per cent H_2S content can be treated with slaked lime at a cost of $9 per day. Virtually all of the hydrogen sulfide is removed. The low cost compared to the theoretical requirements probably means that the hydrosulfide is formed,

$$Ca(OH)_2 + 2H_2S = Ca(HS)_2 + 2H_2O$$

Thus twice as much H_2S is absorbed as demanded by the previous equation, or only 0.085 pound of slaked lime is needed for 0.8 cubic feet of H_2S. Then 2,500,000 cubic feet of refinery gas of 1.0 per cent H_2S content would need 2656 pounds of slaked lime, or about 2000 pounds of lime (CaO). This would cost about $8 for the lime.

A lime scrubber costs little. One holds or circulates the lime slurry in a tower and bubbles the gas through it, replacing the spent sludge daily with fresh lime. Why slaked lime is not more generally used to remove H_2S from refinery or oil well gases, the writer does not know.

Ferric oxide is widely used to remove hydrogen sulfide from illuminating (artificial) gas. The reactions are,

$$Fe_2O_3 + 3H_2S = Fe_2S_3 + 3H_2O \quad \text{or}$$
$$Fe_2O_3 + 3H_2S = Fe_2S + 3H_2O$$

The gas is passed through large vessels which contain the iron oxide. When the latter has become saturated it is removed and exposed to the air, where under the influence of the air, it is oxidized back to the oxide and sulfur set free.

Some companies have installed the Seaboard (Sperr) Liquid Purification[9] process for hydrogen sulfide removal. The gas to be purified passes up through an absorber countercurrent to a down flowing solution of soda ash, and then through another absorber countercurrent to a stream of air. The soda ash absorbs the H_2S, thus,

$$H_2S + Na_2CO_3 = NaHS + NaHCO_3$$

[8]Ind. & Eng. Chem. 17, 355, 1925.

[9]Owned by Koppers Co., Pittsburgh, Pa.

In another column air is blown through the charged solution to remove the hydrogen sulfide and reactivate the solution for use over again. A plant to treat 3,000,000 cubic feet of 4 per cent H_2S content costs about $60,000.00. Ninety per cent of the H_2S is removed. It costs virtually as much more (installation cost) to reduce the last 10 per cent of H_2S to an insignificant figure as it does to take out the first 90 per cent, and if the gas is to be treated to sell it to a gas distribution company for use in houses this must be done.

Fischer[10] uses cupric chloride dissolved in brine at 176 F. Sulfur, hydrochloric acid and cuprous chloride are formed. The sulfur is recovered by using an air blast and cupric chloride is again formed.

The I. G. of Germany uses active carbon to absorb sulfur compounds. The H_2S is oxidized to sulfur and dissolved out of the charcoal with ammonium sulfide, after which the solvent is evaporated off to recover the sulfur.

[10]Pet. Times, Sept. 14, 1929, p. 492.

Filtering Clay By-Product Of General Petroleum

SAN FRANCISCO, March 27.—Among the by-products of the General Petroleum Corp., California subsidiary of the Standard Oil Co. of New York, is a variety of the mineral Montmorillonite, or San Diego clay. It is used for filtering lubricating oils and takes the place of the more widely known fullers earth. The mineral, according to Paul W. Prutzmann, patent engineer of the General Petroleum Corp., takes its name from a town in France called Montmorillon, where deposits of it were first found early in the last century.

Montmorillonite is characterized by a high percentage of alumina and an equally high percentage of water of hydration. All the samples are dense and rather hard when dry, of a waxy appearance and extremely soluble in water, in which they tend to form a jelly-like mass. Some of the samples from Wyoming and Montana, according to Mr. Prutzmann, will gelatinize to a substantially solid condition with from six to ten times their weight of water. San Diego clay is described as less collodial and will solidify with about three parts of water.

The San Diego clay occurs in streaks of different colors, all having similar properties. These range from waxy white to rose pink and varieties of shades of gray and brown. Wyoming samples show pale waxy green and brilliant pale yellow. San Diego clay is also distinguished from other varieties by containing 15 per cent extremely fine sand and a larger percentage of magnesia.

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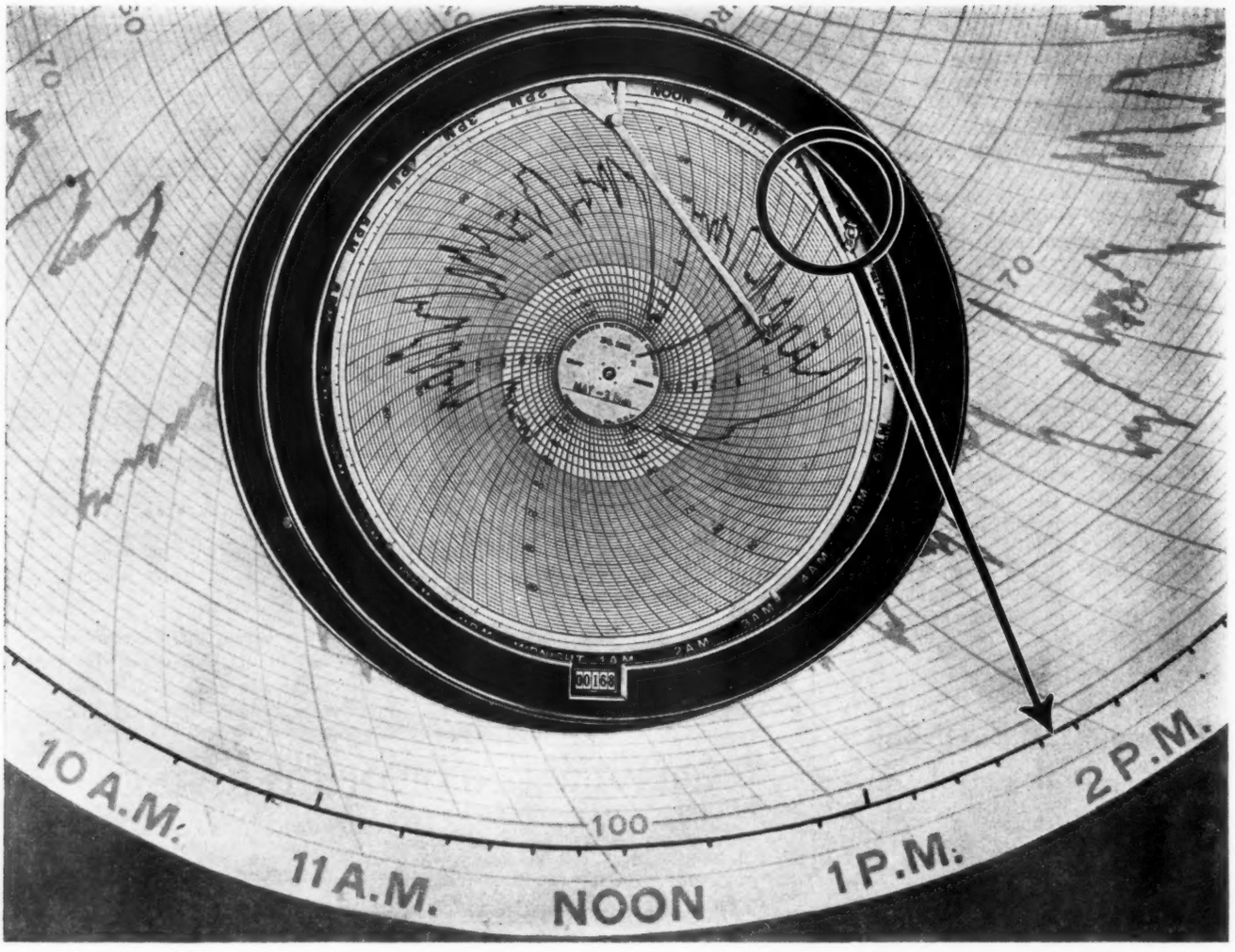

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New Refining Patents

Refining Lubes in Vapor Phase. U. S. P. 1,746,915, Feb. 11, 1930, George H. Taber, Jr., Assignor to Sinclair Refining Co.

The caustic alkali treatment of lube distillates, as commonly practiced, has two major disadvantages; it necessitates an extra distillation, and the liquid phase treatment is relatively inefficient. This invention is aimed at elimination of both these handicaps by one expedient, utilizing the principle of vapor phase treatment both to avoid one distillation and to achieve more intimate contact of the distillate with the caustic reagent.

The essential feature of the invention is an apparatus in which the fractions in the lubricant range, being vaporized directly from the crude, are treated with caustic alkali before the vapor is condensed. The reagent is so placed that any condensate which may be formed must also come in contact with the alkali. In the ordinary process the lighter fractions, which are first to distill in this range, may easily escape contact with the reagent and carry with them the impurities which it is desired to remove. In this apparatus every part of the distillate comes into thorough and intimate contact with the reagent.

As an example, the specification shows a drawing of a layout arranged for continuous operation, allowing for separation of 3 cuts from the treated distillate. The layout has 3 stills; this number may be greater or less, according to the number of cuts desired. The other features of the apparatus are fractionating towers, treating towers and condensers, the towers having conventional baffle construction (preferably helical) to provide large contact surface.

A different embodiment of the invention is specified in U. S. Patent 1,746,916, granted to the same inventor on the same date. This modification is adapted for use with a series of continuously operated stills in which progressively heavier fractions are treated to obtain progressively heavier distillates, by distillation at atmospheric pressure or under vacuum.

Decolorizing Gasoline. U. S. P. 1,747,806, Feb. 18, 1930, Vanderveer Voorhees, Assignor to Standard Oil Co. of Indiana.

In the vapor phase treatment of gasolines with absorbent materials such as decolorizing clay, the yield of satisfactorily decolorized gasoline is undesirably limited. For instance, a 10-pound charge of Olmstead clay is effective only for about 1000 to 1500 barrels of distillate; beyond this limit the color begins to be darker than the permissible standard.

It has now been found that, if the condensate from the vapor phase clay treatment is agitated with about 10 cubic centimeters of sulfuric acid per liter of condensate, color is improved and the yield of decolorized oil is 3 to 5 times greater with a given charge of clay. The preferred acid concentration is about 50 per cent, but more dilute acid may be used. The treatment is not effective with acid stronger than 70 per cent. If desired, all the clayed oil may be treated with acid; or the first portion, being sufficiently decolorized without acid, may be withdrawn before the acid treatment is applied.

Stabilizing Gasoline. U. S. P. 1,748,507, Feb. 25, 1930, Benjamin T. Brooks, Assignor to Gray Process Corp.

Treatments to prevent discoloration and sedimentation in gasoline or kerosene during storage have hitherto been largely empirical, owing to uncertainty about the true cause of the deterioration. The cause has now been ascertained; it is acidity, developed by decomposition, oxidation or hydrolysis of sulfur compounds or other acid-forming impurities.

Proceeding from this knowledge, advantage has been taken of the solubility of ammonia in liquid hydrocarbons to provide a means of stabilizing stored gasoline. Dry ammonia is soluble in gasoline or kerosene only to the extent of about 3 grams per gallon; but this is ample, because ½ gram per gallon suffices for protection in most distillates.

The ammonia gas may be generated in substantially dry form, by the action of concentrated aqua ammonia on solid caustic; or it may be taken from a cylinder of liquefied anhydrous ammonia, using a reducing valve to control the rate of passage of gas into the liquid. The latter method is preferred for large scale operation. The dosage may be adjusted according to the tendency of the gasoline to darken; cracked gasolines generally require more ammonia than straight run gasolines.

Instead of ammonia, an aliphatic amine may be used, for example a liquid amine such as trimethylamine. These amines are more soluble than ammonia gas. The treated distillates retain their water-white color during prolonged storage or sunlight exposure.

Improvements in Fractionation. U. S. P. 1,748,411 and 1,748,508, Feb. 25, 1930, M. B. Cooke; and 1,748,595 and 1,748,704, Feb. 25, 1930, Richard B. Chillas, Jr., and Albert G. Peterkin, Jr.; all assigned to Atlantic Refining Co.

These inventions are embodiments of a principle which permits increased efficiency in the fractional distillation of liquid mixtures, particularly of crude oil or its distillates. The essence of this principle is successive contact of vaporized fractions with pools of liquid and with solid surfaces for removal of entrained liquid, temperature being controlled in the successive contacts according to the results desired.

The four patents in the series cover separate improvements in apparatus for utilizing this principle. The two which are issued to M. B. Cooke specify improvements in the combination type of bubble tower which has, in addition to the bubble pools through which the vapor percolates, packed zones of inert or catalytic material serving to remove entrained liquid from the vapor. The two which are issued to Chillas and Peterkin relate to improvements in fractionating petroleum oils in columns of the bubbler plate, sieve plate or equivalent plate type.

In describing his invention, Cooke states that the recognized advantage of the bubble tower type of fractionator is its efficiency in close separation of fractions, but that this efficiency is impaired by the entrainment of liquid mist in the vapor as it passes from pool to pool. By interposing a vapor arrester between pools, this entrained liquid is trapped and returned to the liquid from which it came and the fractionation is much closer so that more precise division may be made between fractions. Thus the quality of the products can be more accurately controlled.

Cooke's patents specify a form of vapor arrester in which perforated hexagonal caps are fitted together to form a continuous grid, on which packing material is carried. The packing material may be a porous ceramic mass or the like. A particular advantage is that the reflux liquid as it passes down the column does not make any contact with the vapors from which the entrained liquid has been removed.

The two patents of Chillas and Peterkin cover improved means of achieving the same effect in a different way. The baffle plate principle is utilized, and the vapors with their

(Continued on Page 66)

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1930

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Cracking methods studied by refiner of Russian crude Feb. 26, p. 69; and Dec. 25, 1929, p. 71
Effects of temperature, time, pressure in cracking; refluxing and recycling Feb. 19, p. 49
Development of cracking equipment; polymerization and condensation; effect of temperature Feb. 12, p. 51
Thermodynamics foretell cracking reactions; entropy Feb. 5, p. 63
Cracking aromatic hydrocarbons; use of catalysts Jan. 29, p. 61
Cracking of olefins, naphthenes, polynaphthenes Jan. 22, p. 57
Increased cracking will cut amount of 1930 crude runs Jan. 15, p. 19
Dubbs cracking unit produces high anti-knock gasoline from Pennsylvania gas oil Jan. 15, p. 30
Cracking of paraffins; temperature-time factors; secondary reactions Jan. 15, p. 55
Column temperatures; top reflux; fractions per column; coking and corrosion; operation and tower efficiency Jan. 8, p. 61

1929

Process temperatures control anti-knock qualities Dec. 11, p. 36
Rectifying plant removes hydrogen sulfide from cracked gasoline Dec. 11, p. 85
Free sulfur is greatest corrosive agent in cracking plants Dec. 11, p. 89
Products of vapor phase cracking are result of secondary reaction Dec. 11, p. 91
Metals, sunlight and moisture affect gum formation Dec. 11, p. 93
Vapor phase cracking of low grade oil at 1050 F. practical Dec. 4, p. 33
Chemical inhibitors stabilize gasoline color and knock rating; retard gum Dec. 4, p. 40
How corrosion is combated in cracking stills Dec. 4, p. 49
10 methods of modernizing old shell stills Oct. 30, p. 83
Cracking progress in past year Oct. 30, p. 153
Increased cracking coil capacity by heat exchangers Oct. 30, p. 162
Fixed gas from Gyro process yields highly anti-knock fuel Oct. 30, p. 173
Automatic control method for cracking still stabilizers Oct. 30, p. 179
Hydrogenation to be used first in conversion of fuel oil July 10, p. 27
Extra soaker on tube-tank battery makes 2000-hour runs June 26, p. 78
Cracking, lube making from Ranger crude June 26, p. 80; June 19, p. 78; June 5, p. 73
Light cracking, de-salting, distilling West Texas crude May 29, p. 65
England to have vapor phase plant to crack coal tar oil May 29, p. 68
Heavy cracked residuum produces specification fuel oil May 15, p. 81
Control gasoline and fuel quality in cokeless cracking process May 1, p. 69
One cracking unit is now whole refinery May 1, p. 76
Patent club offers to license cracking plants perpetually Apr. 24, p. 37
Operation of Gyro process described Apr. 24, p. 40-a
Cracking plants now designed for individual plant needs Apr. 24, p. 83
Cracking still coke, acid sludge, make fuel briquets Apr. 10, p. 68
Cracking costs handed knockout in continuous 60-day run Apr. 3, p. 73
Gyro to license vapor phase process March 13, p. 37
Siamese skimming, cracking plant gets 60% gasoline March 13, p. 69
Improving fractionation in cracking systems March 13, p. 78
Washing heavy cracked naphtha with soap gives color Feb. 20, p. 61
Refinery gets 70% light oil yield Jan. 9, p. 72
How to make benzol from natural gas Jan. 9, p. 79
Tailors refinery to fit the market Jan. 2, p. 26

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National Petroleum News

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Cleveland, Ohio

New Refining Patents

(*Continued from Page* 63)

entrained liquid are caused to impinge on the baffle plates at velocities higher than the vapor velocity employed in usual bubble tower practice. The sudden impact of the liquid mist particles on the solid baffle plate surface traps the entrained liquid for return to the liquid pools. In this method, as in that of Cooke, the result is achieved without permitting contact of the reflux liquid with vapor which has been freed from entrained liquid.

Natural Gasoline. U. S. P. 1,748,051. Feb. 25, 1930, Paul D. Barton, Assignor to United Oil Co.

This invention is an application, to natural gasoline recovery, of the general principle of separating one fluid from another by contact with a system comprising an absorbing fluid which is immiscible with either fluid of the mixture, and an adsorbent capable of selectively adsorbing one component of the mixture but not the other.

Successful utilization of this principle in separating gasoline vapor or mist from natural gas depends on use of a liquid absorbing medium in which the gasoline is emulsifiable but not soluble, and a collodial adsorbent which can be kept in suspension in the liquid. Water is the cheapest and most convenient of the suitable liquid absorbing agents. Collodial clay and soap are among the suitable adsorbents.

The process requires no special equipment other than that which is in common use in natural gasoline plants; it is preferably carried out in an ordinary absorption tower, in which the gas is fed in at the bottom and the stripped gas is drawn off at the top, the absorbing medium being fed in at the top and drawn off, laden with gasoline, at the bottom.

The emulsion which is formed is not of the stable or permanent type and presents no difficulty in separating the absorbed gasoline; the instability of the emulsion is sufficient so that separation into layers is effected merely by settling. The process is economical, in that no heating of the gas is required. Ordinarily the temperature of the natural gas as it comes from the ground is somewhat higher than the optimum for this process, and some cooling is desirable. Since most natural gas is under pressure as it comes from the well, release of a sufficient part of this pressure suffices for cooling; or the temperature may be lowered to the desired level by permitting radiation of heat from the gas to the atmosphere. The only power requirement is for pumping the absorbing medium to and from the absorption tower and the settling tanks.

Greater Efficiency Found in Tank Wax Sweaters Than in Pans

By Arch L. Foster
N. P. N. STAFF WRITER

CLEVELAND.

OPERATION of tank sweaters for the fractionation of paraffin wax has proven them to be more efficient and satisfactory than pan sweaters, according to the experience of officials of the Standard Oil Co. of Ohio. This company has operated both types of sweaters for several years at its No. 2 refinery in Cleveland, and during that time has had ample opportunity to study the relative efficiency and convenience of the two systems.

The science and art of wax sweating has received less careful attention probably, by refinery technologists, during the last quarter of a century than any other large phase of oil refining. While many investigators have studied the subject more or less thoroughly, and numerous patents have been granted for methods and apparatus dealing with the problem, comparatively little has been made public regarding the fundamental principles underlying scientific fractionation of paraffin wax by "sweating."

In recent years some progress has been made in the art, and somewhat more in knowledge of the science of the operation, yet the twentieth century has as so far seen no really outstanding addition to the sum of useful information on the handling of crude wax.

Wyant and Marsh[1] undertook the study of the various factors influencing efficient sweating, and obtained data which showed the importance of uniformity of sweating temperatures, and of accuracy of temperature control in the sweater room. Unfortunately, these investigators were not able to continue their work as far as would have been desirable, and at present it remains unfinished, so far as the literature is concerned.

Gordon and Marshall[2] studied the influence of colloidal substances on the crystallization and sweating properties of waxes, and succeeded in removing most of the colloidal matter by cooling and edge-filtering the crude itself, and found that by so doing the crystallization of the wax was greatly improved when chilled later for pressing. Rhodes, Mason and Sutton[3] studied at some length the crystallization and melting of waxes, and determined that wax forms in two types of crystals—plates and needles. Their investigation indicated that the needles thus formed are not a true stable modification, but may be formed by the curling of previously formed plates, due to a difference in surface tension of opposite plate sides, produced possibly by some undetermined condition in the mother liquor.

Mabery and others have carried out investigations, but a great deal remains to be done, before wax sweating can be said to be satisfactorily understood. It is well known to every wax refiner that the pressability as well as the "sweatibility" of wax distillate and the resulting slack wax are governed largely, other factors being constant, by manner of fractionation, and "cutting" of the distillate at the still.

Frequently a slight change in the gravity of the wax cut, the inclusion or exclusion of a small percentage of light or heavy ends, the temperature or rate of distillation, or changes in several other variables will show a vast difference in the results in press and sweaters. Rate of chilling the distillate, the temperature at which pressing is carried out govern in great measure the results later obtained in the sweater. Recognition of the effects of "shock chilling" is shown in a patent[4] issued a few years ago, which avoids "shocking" the wax by a careful regulation of the cooling rate, and the avoidance of a wide gap between the temperatures of cooling liquid and oil being chilled, obtaining what is "discontinuous precipitation" of the wax. Redistillation of paraffin distillate or of centrifuged wax, to remove or convert amorphous wax is often resorted to as a means of correcting troubles in pressing and sweating[5].

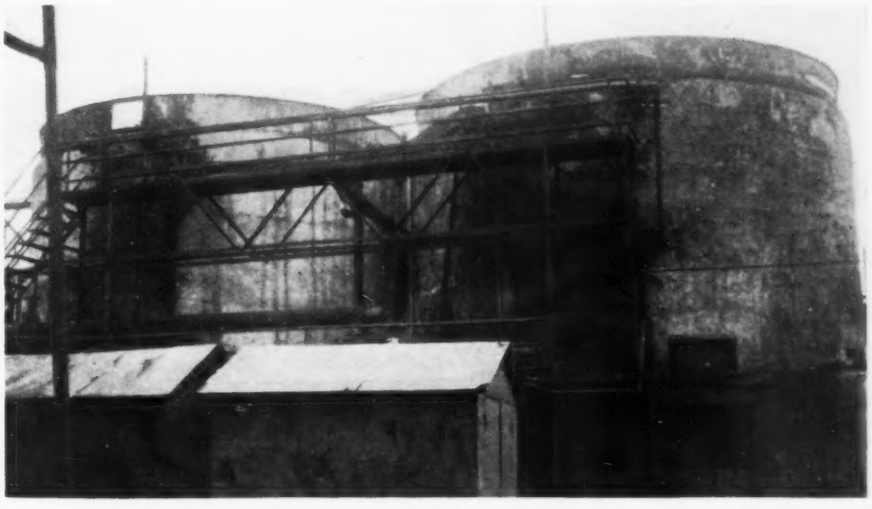

Fig. 1—Tank sweaters, showing steam lines and sweating water return lines. Rundown vats housed beneath tanks

Other recent contributions to the literature on wax, its manufacture and characteristics, have been male by Burrell[6], Kauffman[7], and others[8].

Figure 3, A and B, shows photomicrographs of wax crystals formed under different conditions from distillates of different properties. 3-A illustrates needles formed in the apparent absence of interfering quan-

[1] "Paraffin Wax and Its Properties," Bur. of Mines Tech. Paper 368, by L. D. Wyant and L. G. Marsh—1925.

[2] "Separation of the Components of Petroleum," by P. F. Gordon and A. C. Marshall, J. Soc. Chem. Ind., vol. 46, pp. 304-6T (1927).

[3] "Crystallization of Paraffin Wax," by F. H. Rhodes, C. W. Mason, and W. R. Sutton, Ind. Eng. Chem., vol. 19, pp. 935 (1927).

[4] U. S. Pat. 1,558,619, issued Oct. 27, 1925.

[5] See U. S. Pats. Nos. 1,559,981, Nov. 3, 1925; 1,562,425, Nov. 17, 1925.

[6] "Composition And Properties of Wax," by G. A. Burrell, Oil and Gas Journal, Oct. 10, 1928, page 130.

[7] "Results of Experimental Work in Sweating Slack Wax," by H. L. Kauffman, Ref'r. & Nat. Gas M'f'r, Vol. 8, Sept. 1929, page 74.

[8] "The Petroleum Waxes," Ind. Eng. Chem., Vol. 19, June 1927, page 718; "Solubility of Paraffin Wax in Oil," Ibid., Sept. 1927, page 1042.

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tities of colloidal material, and is the type desired by the operator if pressing and sweating are to be satisfactorily accomplished. 3-B shows imperfect crystals formed probably in the presence of colloids which interfere materially with good crystallization, yielding wax which presses badly and sweats unsatisfactorily.

Control of sweating temperatures and the regulation of temperature throughout the sweater, with proper provision for freeing the sweating "cake" of the liquid formed during sweating, are of prime importance in satisfactory wax fractionation. From the point of view of economy and refining costs, heat efficiency, ease of insulation of the sweater and of heat transmission to the wax are essentials. Compactness of design, high capacity per unit of volume are also important factors to consider.

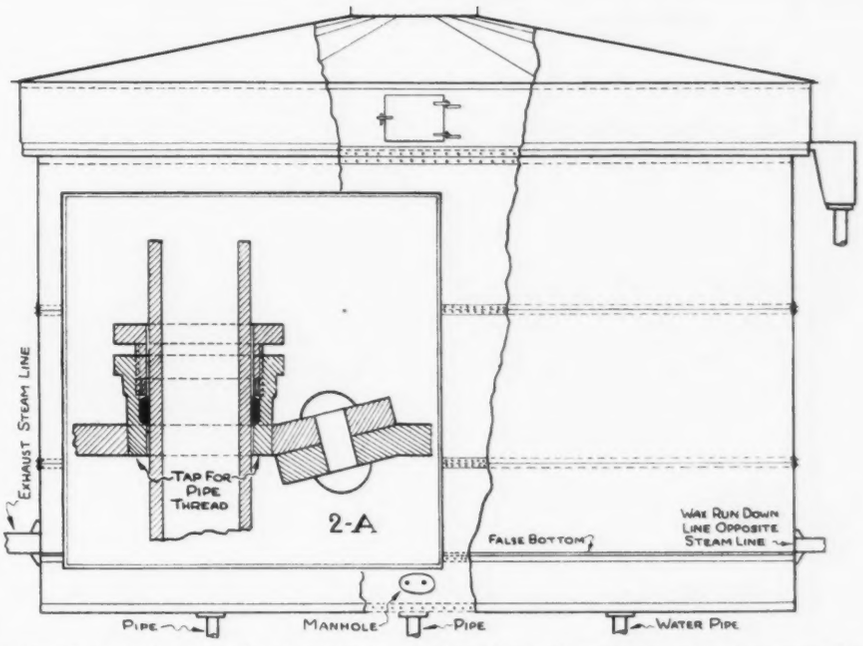
The tank sweater excels in all these points according to the experience of the Ohio company, and it expects to replace its few remaining pans with tanks, as time goes on. The greater capacity of the tank per unit of ground space occupied, its compactness, simplicity of construction and operation, and better control all makes its use more profitable than that of the pan type.

Design of Tank Sweater

The two tank sweaters used in this plant are vertical cylinders 17½ feet high, and 25 feet 1⅛ inches inner diameter, constructed of 5/16-inch plate side walls with ⅜-inch butt strapped seams. The tanks are supported on the concrete roof of the series of wax tanks which receive the different fractions, 12-inch I-beams reinforcing the supports. The side walls are insulated with two layers of 4-inch tile with a 1-inch air space between tile and tank, the outer tile surface cement coated.

The bottom plate is ¼-inch steel, fitted with five 4-inch water pipe connections; two feet above the bottom a "false bottom," or header plate is placed, supported by 2½-inch angle-iron around the circumference and by a series of ¾-inch end-riveted stay-bolts at 18-inch intervals between bottom and header-plates. The ½-inch upper header plate is 26 feet in diameter, projecting over the side wall; both upper and lower header plates are drilled with two-inch holes, which are pipe-threaded, on 4½-inch centers. (See figure 2 and 2a.)

The female member of a packing gland is screwed in to each hole in the top and bottom header plates. One and one-fourth-inch tubes, to the number of some 3300 pass through these glands and connect the water space between the "false" and real bottom plates, with the overflow space above the top plate, and the gland packed tight as shown in Fig. 2a. The distance between header plates is 13 feet. Fig. 2a also shows the method of securing the periphery of the top plate to the tank wall.



Figs. 2 & 2-A—Details of sweater, and method of packing tubes in top and bottom sheets

The wax in the tank is supported by perforated sheets spaced at 5-inch intervals by metal stops; the diameter of the sheets is only slightly smaller than that of the tank, making a practically tight fit at the tank wall. The water tubes pass through these sheets through holes about 1/16-inch larger than the outer tube diameter. Water tubes extend about 2½ inches above the upper plate. A 6-inch rundown line, so placed as to retain about six inches of water over the top plates connects the overflow with a centrifugal pump of 250 gallons per minute capacity, driven by a 5 horsepower motor, by which the cooling and sweating water is returned to the lower water space by the five inlets mentioned above.

Immediately above the false bottom a 6-inch wax rundown line and an 8-inch steam line are placed opposite each other. Just below the top header plate a 4-inch wax charging line, and a 3-inch water charging line are inserted through the tank wall. Six manholes at the bottom of the tank facilitate flushing and cleaning the lower water space. Three-inch and 6-inch steam lines admit either live or exhaust steam into the water space to control sweating temperatures.

No set of exact details of a sweating cycle can be given which are generally applicable, or which are applicable to more than, probably, one type of crude wax, obtained from one crude oil, by a definite set of distillation conditions. In this plant the wax distillate is obtained by steam distillation of Mid-Continent crude in a continuous shell still battery equipped with conventional bubble towers. The properties of the distillate are indicated by the following representative laboratory inspection data:

Gravity, A.P.I.	28.8
Viscosity, SUV/100	84 secs.
Flash, Cleve. O.C.	255
Color, N.P.A.	5
Chemical treatment previous to pressing	None

The distillate is chilled in pipe chillers to about minus six or seven, F., in summer, sometimes as low as minus 12, F. in winter and pressed in ordinary plate presses. The pressed distillate is treated, rerun to specifications, and compounded to prepare a complete line of lubricating oils and greases.

Cycle of Sweating Operation

When charging the sweater water is pumped into the tank until the level is lightly above the first perforated sheet, or screen; melted wax is then pumped in to completely fill the tank. Cold water, from the river in this case, is next circulated through the tubes to solidify the wax, and after it becomes solid the lower supporting water layer is runout, leaving the solid wax supported by the screens.

Steam is then admitted into the water, and the temperature of the sweater carefully raised at a uniform rate, care being exercised that the rate of temperature rise is not too rapid for proper sweating. The rate of increase in temperature of the circulating water is governed by the experience of the operator, and depends on the grade of wax being sweated, the characteristics of the raw product as obtained from the wax presses, as well as the products that are being made.

In general the rate of sweating is faster when sweating slack was direct from the presses, the products from which will receive further sweating later, than when running previously

A *B*

Fig. 3—(A) Wax crystallized under favorable conditions; (B) Crystals formed in the presence of substances which interfere with proper crystallization

sweated fractions to the desired melting point specification.

When the tank is charged with the slack wax from the presses, the temperature of the sweating water is raised gradually, and the first cut obtained by the fractional separation of the entrained oil and lowest melting point wax, termed "foots oil," drains away to storage for such further treatment as the management may find profitable. The second fraction, containing a large percentage of low melting point and amorphous wax, as well as oil, called "heavy foots oil," "intermediate wax," and by other terms, is rerun in the sweaters to reclaim the desirable wax contained therein.

As the sweater temperature is increased, fractions of higher and higher melting point are taken off, until the wax remaining on the screens at a sweater temperature of around 140 F., called "crude wax," "crude scale wax," and other names, is melted by the admission of live or exhaust steam at the base of the tank, and flows to storage beneath the sweater for further close fractionation to the desired melting points. This is of course accomplished by recharging this scale wax to the tank, and sweating under very carefully regulated conditions of temperature, rate of temperature rise, and length of sweating time, to give the desired grades.

As mentioned above no set of sweating conditions can be laid down to fit general conditions. The following representative data will illustrate cycles of the operation on wax pressed from the distillate, the specifications of which are given above. The first column gives the data on sweating a charge of slack wax, the second, that on sweating crude scale similar to the last product mentioned in column No. 1.

To the operator interested in learning something of the sweating art, the temperature employed to obtain a finished wax of a definite melting point, only general information can be given. The melting point of a wax fraction obtained at any given temperature of sweating is dependent on the particular sweater equipment employed, atmospheric conditions, uniformity of the temperatures in the control medium, (i.e., water, in the tank sweater), characteristics of the wax distillate, temperature and manner of pressing, and especially on the length of time the wax is sweated at any given temperature or over any given temperature range.

Table 2 gives the melting points of various fractions obtained from the sweater under varying conditions of charge material, temperature, and time of sweating, with the temperature of the sweater water. It will be seen that the melting point of products obtained at about the same water temperature vary somewhat; this is due to differences in the other variables, nature of charge stock, length of sweating time, etc. The data were selected from actual refinery figures to illustrate the variation between these two temperatures caused by other variables not included.

This plant regularly manufactures four grades of wax for the market. These grades are, based on melting point in degrees F. by the Standard A. S. T. M. Method D87-22; 123-125; 125-128; 128-130; 133-136. Special waxes to different melting points than those here given may be made to meet the specifications of individual purchasers.

Regarding the relative efficiency of the tank sweater as compared to the more common pan sweater, it is the strong conviction of the operators of this plant, as previously mentioned that the tank is by far the more efficient and desirable, easier and simpler in control, and fractionating the wax more definitely to specification. The design of the tank is such that thermal efficiency is obviously greater, control of temperature in different parts of the chamber is closer and easier to maintain, and the sweating cycle is shortened by the greater ease and efficiency of insulation and the more intimate contact between heating element and wax. The pan sweaters in the plant will be suspended by tanks when replacement or major repairs make replacement necesary, according to the plant officials.

That thermostatic control is entirely feasible with the tank sweater, has been determined by the operators of the plant. While this method is not regularly used at present, for other reasons, experimental data has shown that such control is attainable without great trouble, and this method will probably eventually be adopted. It is interesting to note that one or more types of apparatus have been patented, which control sweater temperatures thermostatically[9].

[9]See U. S. Pat. No. 1,636,730 "Thermostat Control For Wax Sweater," issued to S. S. Amdursky, July 26, 1927.

Table 1

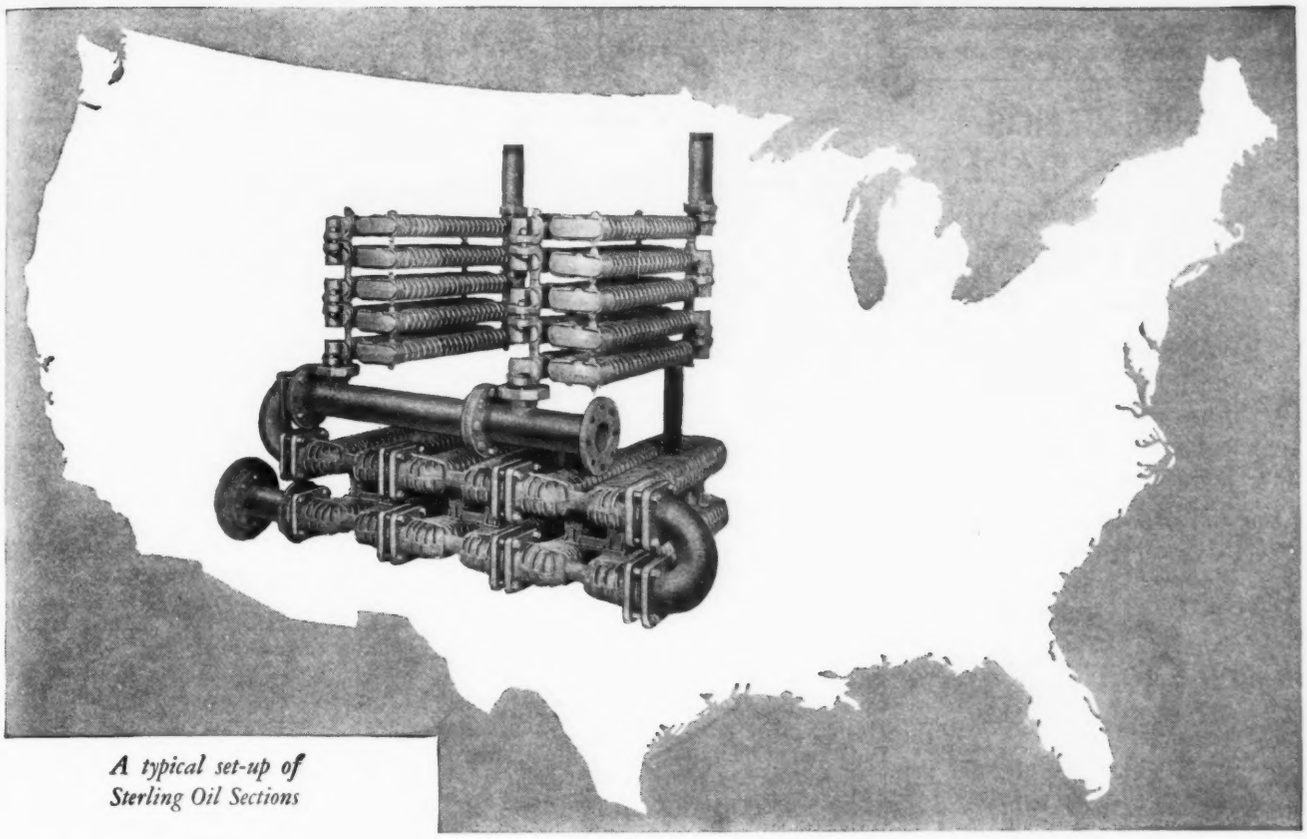
Representative Tank Sweater Data, and Products Obtained

	No. 1		No. 2	
Amount of charge, gals.	37,900		39,200	
Melting point of charge, degrees F.	101		116¼	
Time of filling sweater, hours	2¼		2¼	
Time of cooling sweater, hours	10½		6½	
Time of sweating, hours	11½		31	
Total time of cycle, hours	37½		47	
		M.P. °F.		M.P. °F.
Foots Oil yield, per cent of charge 66.2	81.0		.....	.....
Hvy, Foots Oil, per cent of charge 15.95	105.0		.....	.....
Intermediate Wax, per cent of charge....	.....		74.65	115.0
Crude Scale Wax, per cent of charge....16.0	117.0		.....	.....
Refined Wax, per cent of charge....	.....		23.45	124.5

Table 2

Sweater water temperatures and melting points of fractions obtained

M.P. Of Fraction °F.	Sweater Temperature °F.
106.0	120.0
124.5 (Refined Wax)	140.0
81.0 (Foots Oil)	110.0
92.25 (Hvy. F. O.)	110.0
115.25 (Crude Scale)	128.0
101.0	114.0
125.7 (Refined Wax)	136.0
81.0 (Foots Oil)	104.0
94.0 (Hvy. F. O.)	120.0
116.0 (Crude Scale)	130.0
108.0 (Int. Wax)	134.0
129.0 (Refined Wax)	138.0
82.0 (Foots Oil)	112.0
80.0 (Foots Oil)	110.0
94.0 (Hvy. F. O.)	118.0
116.0 (Crude Scale)	140.0



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With a minimum of effort, Oakite cleaning speedily restores the original freshness to paint work, washing away all slopped-over oil, grease, and dirt. Write for booklet giving particulars on this and other Oakite economies. No obligation.

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OAKITE
Industrial Cleaning Materials and Methods

New Equipment

A two-stage oxygen regulator, designed to eliminate fluctuation in working oxygen pressures, has been added to the Prest-O-Weld line of the Oxweld Acetylene Co., 30 E. 42nd St., New York.

The chief feature of this improved design is two-stage pressure reduction, which is accomplished through two independent sets of diaphragms, valves and springs. The regular is known as type R-109.

Instead of reducing the full cylinder pressure of about 2000 pounds per square inch down to working pressure, this new device reduces through the wide range in two stages.

* * *

Wilson & Bennett Mfg. Co., Chicago and New York, has developed a 100-pound grease drum that is sealed with a standard lug cover instead of the old bolted cover, superiority of which is claimed in that its closure is faster, it offers greater protection against leakage, and easier removal of contents.

* * *

Botfield Refractories Co., Philadelphia, Pa., is marketing a new line of cement products under the name of Adachrome Plastic Super-Cement, in which the basic material is a chromite ore from South Africa. It is claimed that this cement is very resistant to abrasion, erosion, and the action of burning acid sludge. It is sold in plastic form ready for use as a surfacing material or as a binder in patching materials for repairing refractory equipment, shipped in 250-pound and 500-pound drums.

* * *

AC Spark Plug Co., Flint, Mich., has appointed C. W. McKinley as assistant chief engineer of the experimental engineering department.

* * *

J. V. Santry has been chosen head of the Combustion Engineering Corp., here, which recently went into receivership. Wilfred R. Wood and the Irving Trust Co. are receivers. Col. H. D. Savage was formerly president, and is now assisting the receivers.

Mr. Santry, before his resignation two years ago from the company, was president.

* * *

The refractories properties of Evans & Howard Fire Brick Co., St. Louis, have been purchased by General Refractories Co. here. The purchase includes the refractories plants, business and all the clay lands in Missouri and Georgia held by the Evans company. It gives the General company 18 modern plants with total capacity of nearly 1,200,000 brick per day in Pennsylvania, Maryland, Kentucky, Illinois, Missouri and Georgia.

* * *

A type of electric motor designed for use in hazardous industries where explosive atmospheres prevail, has been developed by the Louis Allis Co. here. The motor is known as the Type E "explosion-proof" self-ventilated squirrel cage motor.

It is designed for oil, chemical and dry cleaning industries. Outside of being explosion-proof, the motor has these advantages. only slightly heavier than standard motors, it can be installed in about the same space and it is interchangeable in almost all sizes with standard motors. It also eliminates such construction as fire walls, mounting motors in outside or special rooms, piping to external air supply for motor ventilation, and is safe and efficient, the company says.

* * *

The Brown Instrument Co., Philadelphia, Pa., has off the press Catalog 7501 describing Brown remote type instruments and illustrating how the various instruments operate. Sectional views and wiring diagrams amplify the descriptions.

These remote type instruments are furnished in models respectively designed to control, record, and indicate flows, pressures, liquid levels and positions. Either circular chart or strip chart recorders are available.

* * *

A 46-page booklet by the Naylor Pipe Co., Chicago, describes Naylor line pipe for gas, oil, vacuum gas lines, for refinery sludge lines, tank swing and tank gauge pipe.

It tells of the development of Naylor Spiralweld truss structure, which makes a pressure pipe 50 per cent lighter in weight than standard weight steel pipe. This pipe has some new engineering features, one of which is a spiral lock seam, electrically welded in a continuous spiral truss providing mechanically correct structure, and giving maximum structural strength with minimum weight.

Life of the structure is enhanced against rust and corrosion. Because of its lightness it can be handled more readily and therefore, more quickly. The booklet shows illustrations of construction features and also shows lines that have been laid for oil companies.

Topping Plant Strips Wild Crude In Oklahoma City Pool

By John Power
N. P. N. STAFF WRITER

OKLAHOMA CITY

TO RECOVER the lighter fractions contained in the high gravity crude produced by some of the wells in the Oklahoma City pool, the Indian Territory Illuminating Oil Co. is putting in a topping plant on its Bodine property in 30-11N-2W, in that pool. The plant is designed to take only the tops of the "wild" crude. The bottoms will be pipe line grade oil of about 38 degrees A.P.I. gravity.

There are three sources of crude in the field. One is the wild crude, practically gasoline, with a gravity as high as 70 degrees A.P.I.; the regular field crude of around 38 degrees A.P.I. gravity; and a mixture of the above two grades. It is intended that the plant will handle only the first and last of these.

There is no particular point, says the I.T.I.O., in running as pipe line oil the highest gravity crude; nor is there any advantage in storing it. The storage loss is too great for the latter course, while the pipe lines maintain that they have no particular desire to handle the wild stuff, as the lighter fractions are of no particular benefit to them.

One of the chief points of value in the Oklahoma City crude lies in its high content of lubricating oil, a fact which is equally as important as the possible gasoline yield. Particular pains are taken to keep the Oklahoma City crude from becoming mixed with the crude from other fields in the pipe lines.

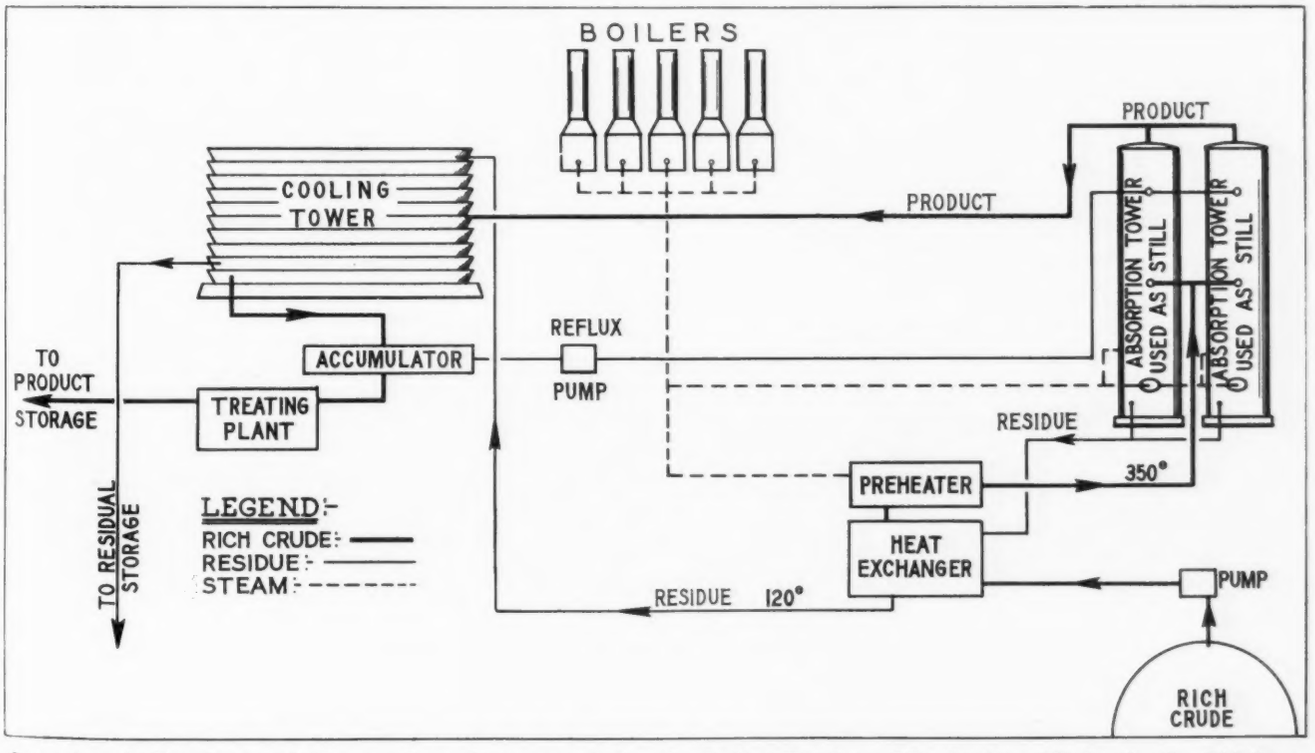
But gasoline is gasoline in any language, so long, of course as it meets specifications. So the I.T.I.O. set about to recover what otherwise might have been wasted.

Although the plant is a unit, separate and distinct from the natural gasoline plant nearby, as much natural gasoline plant equipment is used as possible, in order that its usefulness may not expire with the source of supply. Although the plant is designed to handle 10,000 barrels of input per day, the supply varies so with the vagaries of proration, and the peculiarities of the wells that the I.T.I.O. has hesitated to make any definite estimate as to the amount of throughput the plant will average.

Following the rich crude from storage through the plant to the finished product, it is first picked up by a motor driven centrifugal pump and sent to the heat exchanger. The latter are Tulsa type, having six units, with a total of 468 square feet of surface. From the heat exchangers the raw crude goes to the preheaters, which consist of three elements, having a total of 420 square feet of surface.

The crude emerges from the preheaters at about 350 degrees F. and continues its journey to the absorption towers which are used for stills. These, too, are Tulsa type, 7 by 30 feet, and having ten trays each. The rich oil is admitted at the fifth plate from the bottom. The towers are hooked up in parallel, the rich oil being introduced from a header. Each tower has a heating element of 700 square feet into which live steam is introduced.

Emerging from the still the lighter fractions or tops of the raw crude



Layout and flowsheets of the topping plant erected by the Indian Territory Illuminating Oil Co. in the Oklahoma City pool. The plant is designed to top the high gravity crude produced by some of the wells in the field, but for which no premium is paid by the purchasing companies

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These two new modern additions to the Henry Vogt Machine Co's nineteen acre plant are a testimony to the increasing demand for Drop Forged Steel Valves and Fittings for high temperature and pressure service. Since our facilities are now practically double we are equipped to adequately meet your requirements promptly from stock.

The new machine shop completely equipped with modern machinery.

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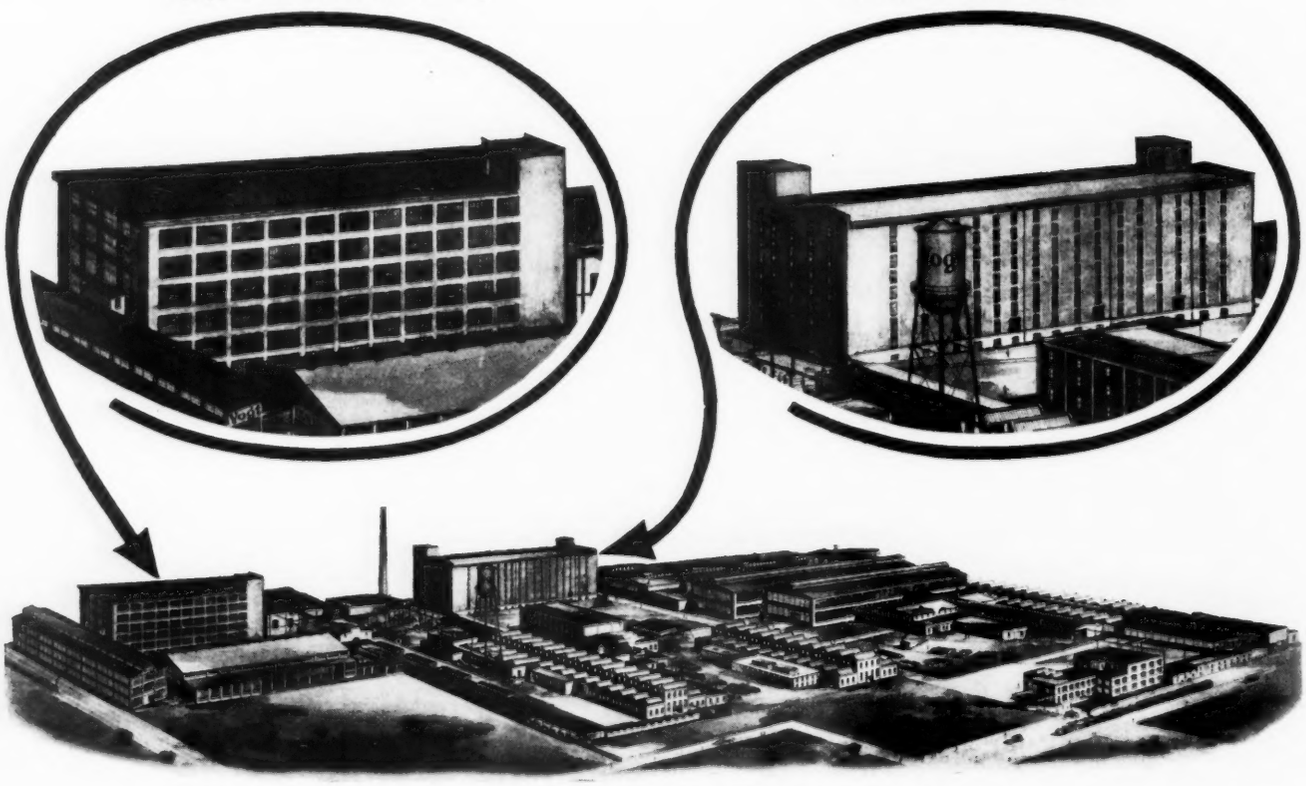

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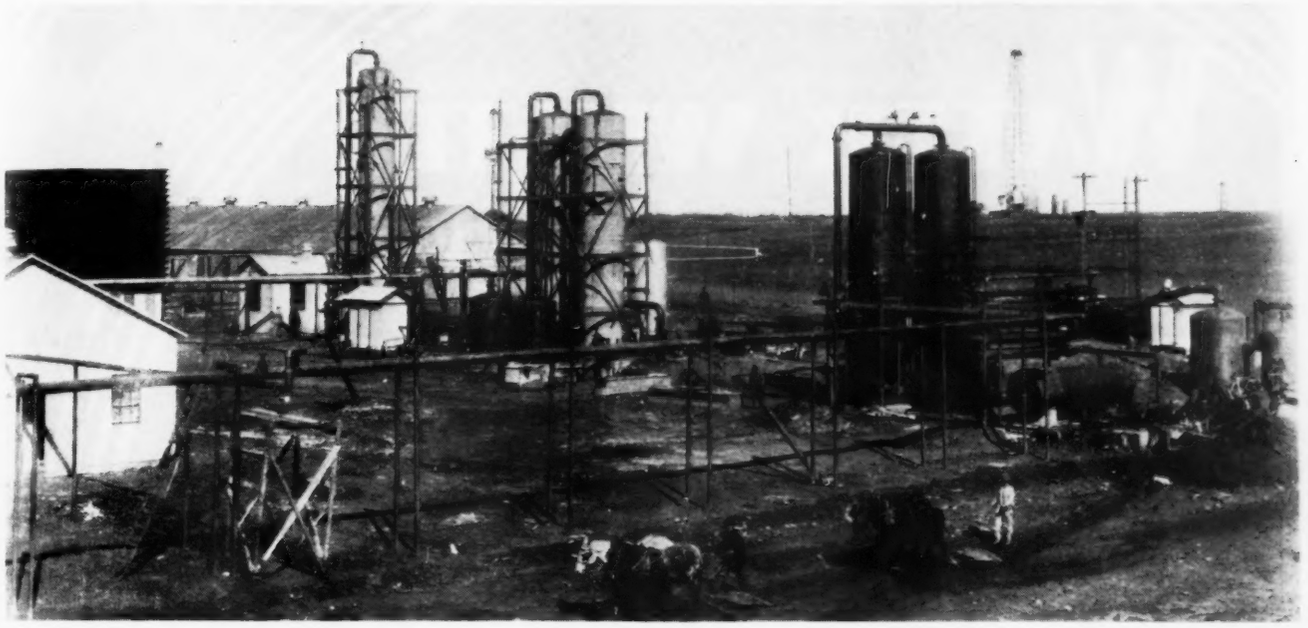


Vapor lines and distillation units for the topping plant at Oklahoma City. The absorber towers and fractionation tower in the back ground are part of the I.T.I.O. Bodine gasoline plant

pass through a line to the cooling sections. The cooling tower is 24 by 87 feet, and is equipped with Griscom-Russell coils.

From the cooling sections the product, minus that part of it used for reflux, goes to the treating plant, where it is treated by the sodium hypochlorite method to meet the doctor sweet test, and to bring it to specification.

The residual crude not distilled in the towers will pass from the bottom of the still to the heat exchanger, through which it passes after giving up some of its heat to the rich oil coming in. It is expected it will enter the heat exchanger at around 240 degrees F. and emerge at about half that temperature.

Emerging from the heat exchanger into a surge tank, the residual crude is pumped through the cooling sections to storage, from which point it is taken by the regular pipe line gathering system.

Control of the product is to be maintained by the amount of reflux sent back over the trays; by the amount of steam to the crude preheater and heating elements in the bottom of the stills, and by the pressure on the stills. The latter will be maintained by the pressure carried on the accumulator, ten pounds pressure here is expected to do the work.

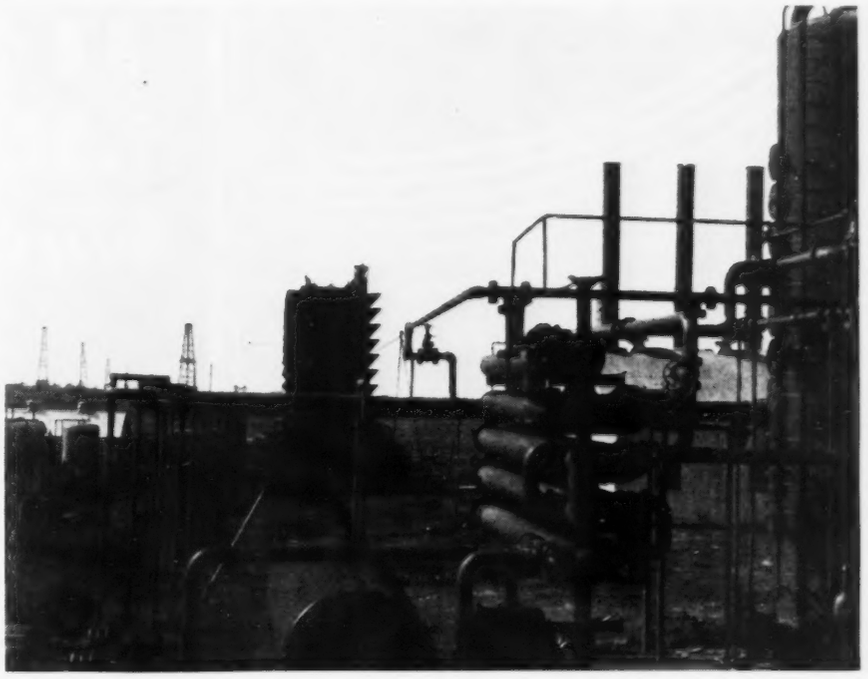
The temperature of the crude to the stills will be controlled by the volume of steam admitted to the preheater. This volume, to put the crude up to the 350 degree F. mark, will be determined by the volume of the throughput and the nature of the crude supply. With the nature of the crude supply varying as it will, this is expected to be one of the more important points of control. Temperature of residual crude off the heat exchanger will vary according to the nature of the crude.

Steam consumption will be at a maximum when the plant is running 10,000 barrels of 55 degrees A.P.I. gravity crude. To furnish the steam, five 125-horsepower oil country type boilers have been provided. The same boiler house serves both the topping plant and the absorption type gasoline plant which adjoins it. The boiler house contains seven boilers all told.

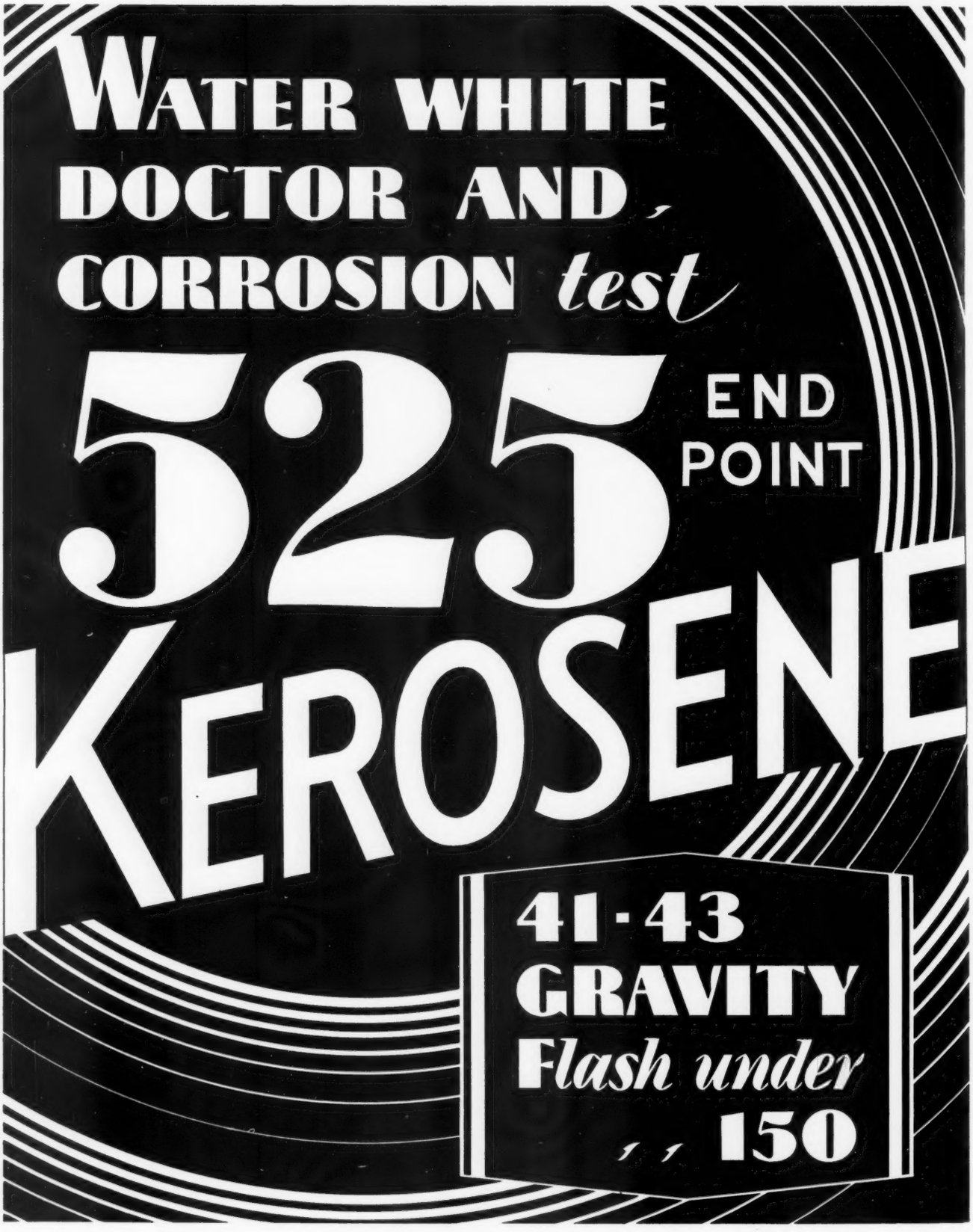
It is planned to manufacture two types of product, either a 64-66 gravity, 390 e.p. gasoline, or a 68-70 gravity, 350 e.p. product, according to market demands. The product will be sold in tank car lots. It is also probable that some of the topping plant product will be blended with the product of the natural gasoline plant adjoining. The product of the latter plant often runs extremely high in gravity, resulting in a loss of some of the lighter fractions.

By adding some of the product from the topping plant the amount of butane in the blend will be increased, thus lowering the boiling point, and saving some of the lighter fractions.

As this is written no real run has been made through the plant. It has been started up for a trial run, and to locate leaks, or "bugs." It is expected however, that the plant will soon be in running order, and turning out a "product to specification."



View of the heat exchangers, vapor line and cooling tower of the topping plant



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Pure Oil's 2,500,000 Gallon Terminal Anticipates Inland Water Traffic

By Roger B. Stafford
N. P. N. STAFF WRITER

Part 2

CINCINNATI

PURE OIL CO. has anticipated inland water transportation of gasoline and oil from refineries to distributing centers in building its new terminal on the Ohio river just below the central business district of Cincinnati.

The terminal now receives all its products by rail from Pure Oil refineries in Pennsylvania, Ohio, West Virginia and the Mid-Continent but with the building of a wharf and the laying of pipe lines to the river's edge, petroleum products may be received by water and pumped from river barges to the terminal's storage and from storage to tank cars for distribution in parts of Ohio, Indiana and Kentucky.

For years Pure Oil used as its Cincinnati district distributing plant the old compounding and refining plant of the Moore Oil Refining Co. This plant lay in the district which is being cleared for the new union station in Cincinnati, so it was sold to the railroads. The new terminal site was picked on the north shore of the Ohio river at Southside. The site had been occupied by the Fleischmann distillery in pre-prohibition days.

The new terminal was designed and its building supervised by the Pure's own engineering staff who had in mind the opening of the Ohio river to year round barge traffic. This year-round traffic was made possible last fall by the completion of the system of dams in the Ohio at just about the time Pure had progressed with the terminal sufficiently to use a large part of it. There still remains some filling and grading to do, and a woven wire fence to be built around it, but all equipment for the storing and handling of oils has been in operation for some months.

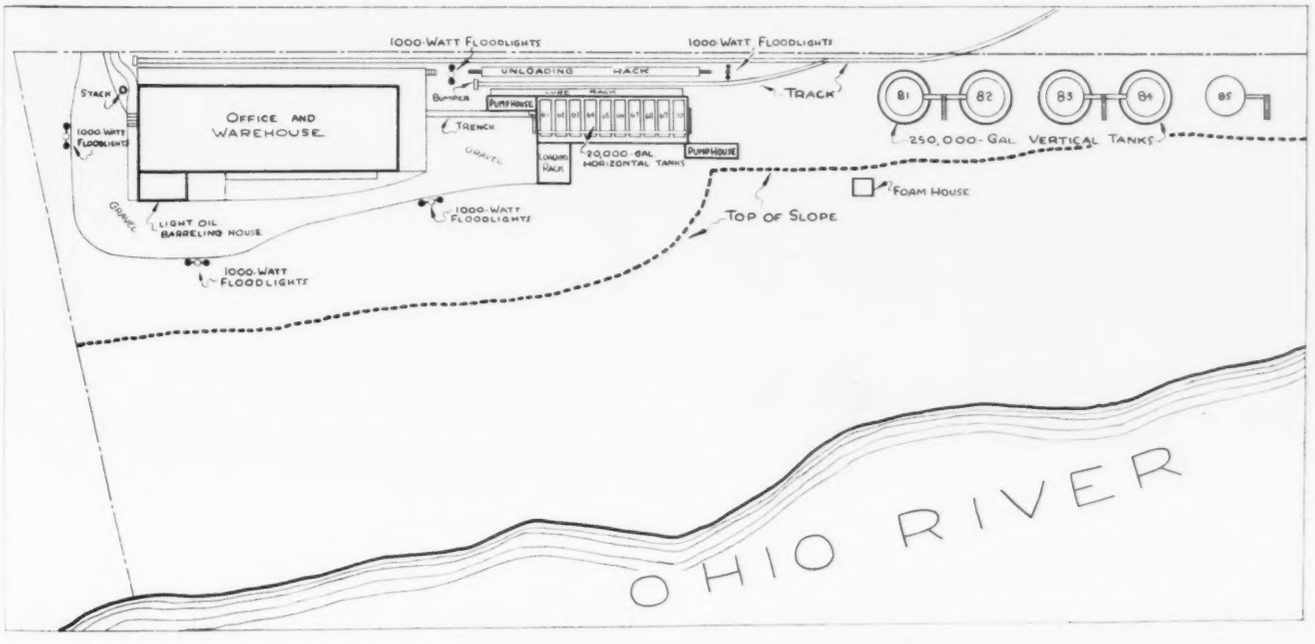
THE new terminal of the Pure Oil Co. on the Ohio river at Cincinnati, which anticipates inland water transportation of petroleum products, will be described in two articles in NATIONAL PETROLEUM NEWS. The current article describes the warehouse building, and how the light oils and specialty products are handled. The concluding article, to be published in the March-April issue of NATIONAL PETROLEUM NEWS, will be on handling lubricating oils, barrel reclaiming, flood protection, the steam plant and garage.

The plant consists of a two-story and basement office and warehouse building; five 250,000-gallon vertical tanks for gasoline and kerosene, ten 20,000-gallon horizontal tanks for gasoline, kerosene, naphtha and other light oils; and 39 10,000-gallon tanks in a heated basement for lubricating oils. There is no fuel oil storage because the company does not job or retail fuel or furnace oils in Cincinnati at present. Its only fuel business is in tank car shipments.

There is barrel storage for thousands of gallons of lubricating oils and specialties, enough to bring the terminal's total storage facilities to 2,500,000 gallons without resorting to temporary or emergency storing of barreled goods in the large yard around the plant.

Expense was not spared in equipping the plant with enough pumps to speed the movement of all kinds of oils through from unloading to the loading for delivery to service stations or customers. The plant has 52 direct driven rotary oil pumps and other equipment that may be described tritely as "up-to-the-minute."

The plant is equipped with latest devices to prevent and to fight fires. It also has one feature of protection



Ground plan of Pure Oil Co.'s new terminal at Cincinnati. Pump house at left of tanks 61-70 is for lubricating oils; at right for light oils

Office building and warehouse of Pure Oil Co. terminal at Cincinnati, showing side with box car loading and unloading platform. Office is at right end

seldom encountered in bulk stations. That feature is flood protection. The plant is built 68 feet above mean low water stage of the Ohio river but twice in the last 50 years—1885 and 1913—the water has risen to a 72-foot stage. Lube tanks in the basement of the warehouse are provided with water flood lines so they may be weighted down in case the Ohio should rise above 68 feet. Otherwise, it was pointed out at the terminal, the warehouse might be floated on a steel raft.

There is trackage for 22 tank and box cars inside the station yard. Five carloads of light oils and five tanks of lubes may be unloaded simultaneously.

The unloading racks and rest of the station yard are illuminated by ten 1000-watt floodlights, set in pairs on steel standards, so work can proceed without hindrance of darkness any day of the year.

The plant is protected with stationary and portable foam equipment.

Warehouse and Offices

The main building of the terminal, the warehouse and office structure, is built of concrete, brick and steel. It is two stories high but with foundation and skeleton strong enough to carry additional stories when growth of the business warrants enlargement. There is a basement and under one corner an extra deep room for three Kewanee boilers and a coal cellar.

The main basement, which extends under the platform where box cars may be loaded or unloaded, is divided into two general divisions. One contains 39 10,000-gallon lube tanks, a battery of 39 motor driven lube pumps, and small can storage. The other part contains the drum reclaiming department, and a wash and locker room for the employes of the warehouse and bulk plant.

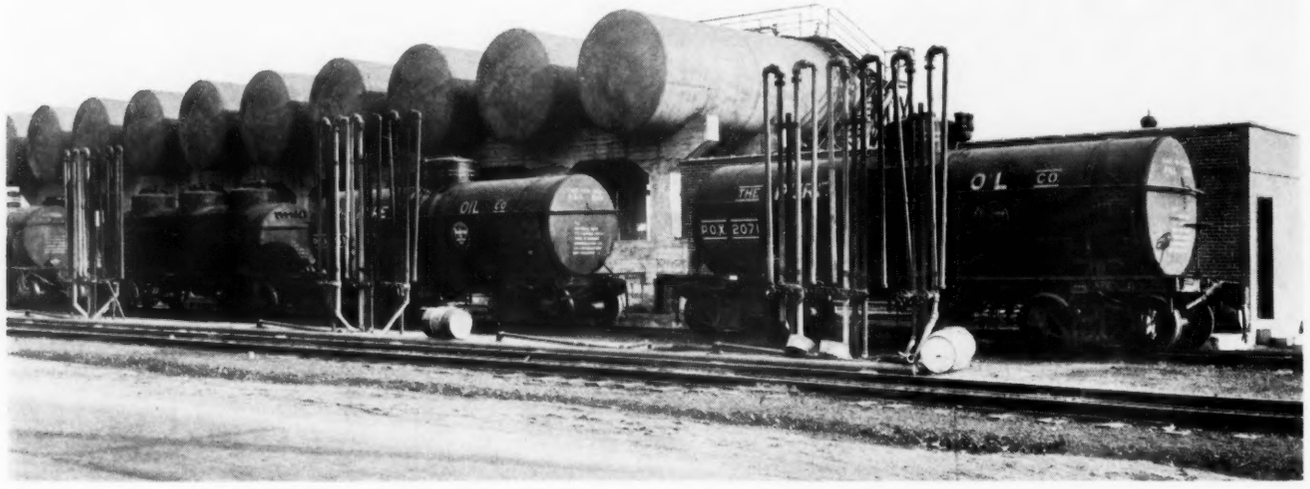
The first floor contains the office of E. L. Heger, plant superintendent, and the plant operating offices. In the warehouse part is the barrel filling department with 39 automatic barrel fillers, barreled oil storage facilities, and pump and other service station equipment repair and paint shop.

The second floor contains the offices of the Cincinnati district organization. There also is provision for a cafeteria which is to be installed later as the plant is not near restaurants. Back of the offices are rooms for storing office supplies, and some of the more expensive specialties such as anti-freeze compounds, and a large room where packaged goods are stored. In half of the large room greases and soaps contained in kegs or drums are piled on racks made of planed 2 x 4's as shown in an accompanying photograph. In the other half are canned greases and specialties in wooden or fiber packing cases.

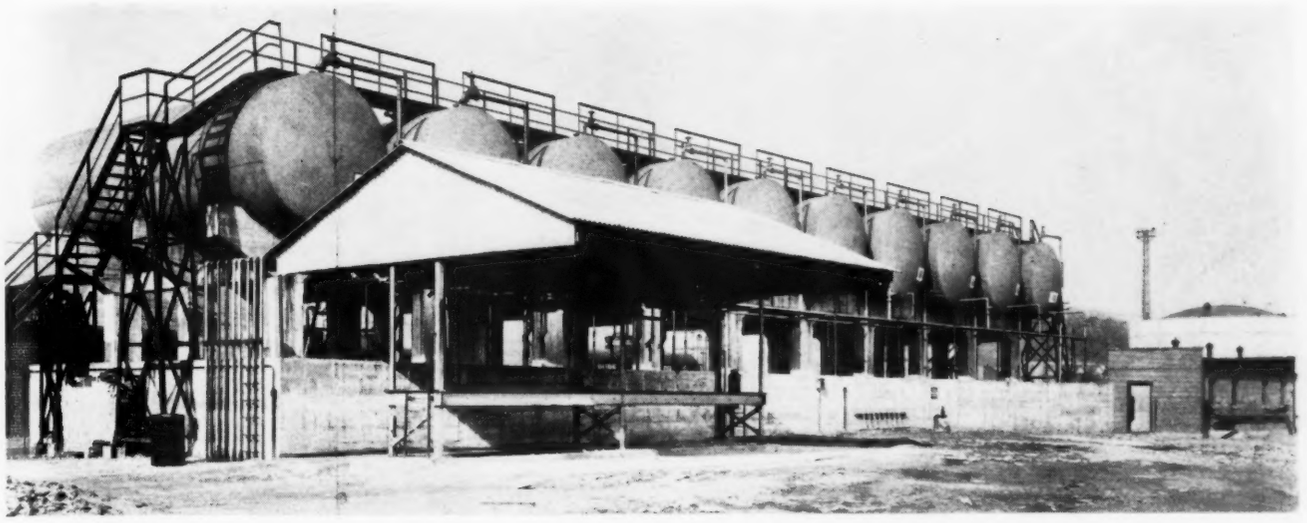
There are platforms along all of one side and one end of the building and along half or more of the other side and end. At the end of the building which houses the offices is the stake truck loading platform. This platform is of the cantilever type and the ground is clear under it, thus making it available for storage if the space ever is needed.

Handling Light Oils

Light oils—gasolines, kerosene and



The unloading racks; for light oil in front of the tank cars, and for lubes on the far side of the tank cars. Tanks are of 20,000 gallons capacity each. Brick building at right is lube pump house



Truck loading rack; the battery of 10 horizontal light oil tanks, and the light oil pump house on right. Note foamite control valve manifold on outside of pump house

special naphthas—at present are received in tank cars and distributed in tank trucks and barrels. In the future the light oils may be received by tank car or river barge and distributed in tank cars, tank trucks and barrels.

All light oils are unloaded overhead at a rack which has capacity for five cars at a time. Unloading lines of which there are six at each unloading spot, are of 3-inch steel pipe. The lines that are dropped into the cars are steel at present but will shortly be replaced with brass. These have a screened bell flare at the bottom. Before the light oils pass to the pump house they are screened again by passing through a screening device coupled in the pipe lines.

Each of the six unloading lines and the 5-inch pipe lines to which they lead, are painted a different color, each color representing a different light oil product. Pumps and manifolds in the light oil pump house are painted the same color as the pipe lines so there can be no confusing or mixing of products once the proper unloading line is placed in the tank car. There is a chart in the pump house telling what the different colors represent and the number of the tank in which each product is stored.

In the light oil pump house are three 300-gallon-per-minute Viking rotary pumps directly connected with 10 horsepower General Electric three-phase motors. These are used for gasoline, two in active daily service and the third held in reserve.

There also are four 200-gallon Viking rotaries driven directly by 7½ horsepower GE motors. These pumps are used for the new gyro process gasoline, kerosene and the special naphthas.

Each pump has a bypass valve and a manifold valve system which permits the pumping of the various products from tank car to storage tanks, or vice versa, or from storage tank to storage tank.

In case water transportation is adopted the products from the barges would be pumped from the barge, by pumps on the barge, direct to the storage tanks. The present pumping system would then be used for further handling the products without any change in layout.

The complete manifold in the light oil pump house consists of about 60 valves all plainly marked as to the origin or destination of the products that passes through each valve. By the introduction of "spool" sections between the groups of valves of each

Four gasoline and one kerosene storage tanks of 250,000 gallons' capacity each. Note circular concrete dikes around gasoline tanks. Device protruding above dike of tank 81 is one of two ventilators installed at each tank to keep vapors from bottom of area between dike and tank. Brick building is foamite mixing and pump house. Foamite control valves are marked with red signs. Aboveground lines are for light oils

Grease and specialty storage. Note the neat stacks made possible by using 2 × 4's. This room is on second floor of warehouse

pump, the entire system may be thrown into one group. There also is provision for inserting a "spool" to connect the city water system with the manifold system so that tanks may be ballasted with water in case of an unusually high flood.

All above ground pipe lines are of steel but underground lines are of galvanized wrought iron to eliminate or minimize corrosion.

There is one 250,000-gallon storage tank for kerosene and four of the same size for gasoline. Products are pumped to and from these five tanks.

The ten 20,000-gallon horizontal tanks are set on high Y shaped concrete cradles so that tank trucks or barrels may be filled by gravity from those tanks. All special naphthas as well as the working supplies of the gasolines and kerosenes, are stored in these tanks.

The products flow by gravity to the truck loading rack and to the light oil barreling room which is in a small wing attached to one corner of the warehouse. The pipe lines to the loading rack and the barreling house are painted the same colors as the larger lines from loading rack, through pump house to storage tanks.

The truck loading rack has facilities for four trucks at a time. The supports of the rack are steel, the floor of steel grating and the roof of corrugated sheeting.

The rack has seven drop lines for filling truck cans with special products. All lines are equipped with Wheaton self closing valves as well as gate valves at the rack. Additional safety is provided by other gate valves in the lines just after they emerge from the large horizontal tanks.

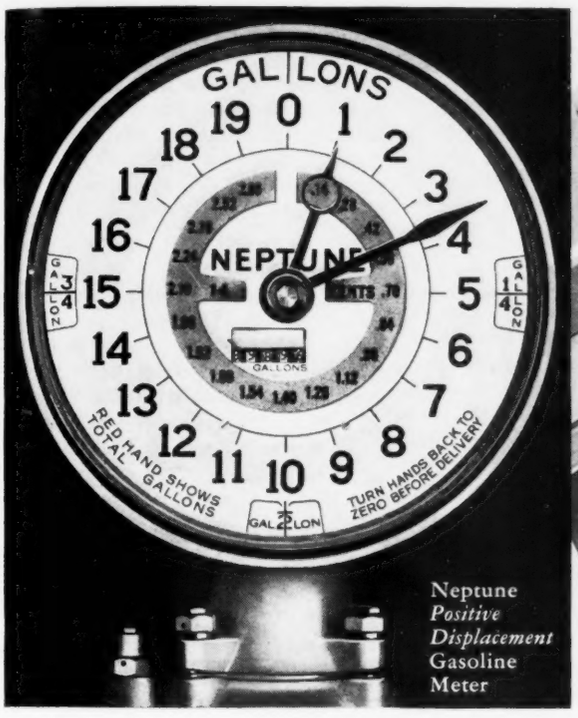
Fill lines that drop into the truck tank compartments are steel at present but brass lines have been ordered, it was said, and will be used as a precaution against sparks.

The truck loading lines are 2½ inches in diameter and are supplied through 4-inch mains from the horizontal tanks.

There are automatic barrel filling outlets for all light products in the

Light oil pump house with control manifolds

Fill up every tank!



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light oil barreling room. Even gasoline is barreled for shipment to some of the poorly accessible hill communities east of Cincinnati where automobiles are few. The floor of this room is wooden so there can be no sparks in the handling of steel drums and cans. Over each barrel filler is an air duct through which vapors from the light oils are drawn.

A large amount of cleaner's naphtha is carried in one-gallon tins for domestic use. This canning is done with a small gasoline hose with nozzle control. This operation requires the complete attention of a workman who seals each can with a cork fitted cap.

Handling the Specialties

Although tons of greases, soaps, gear compounds and other special products pass through the warehouse in a month, most of the handling except car unloading and loading is done by one man on the second floor of the warehouse.

When a car of specialties arrives from one of the Pure compounding plants it is unloaded at one end of the platform along the side of the warehouse. The package goods and products in kegs are usually placed on platform trucks and wheeled to an elevator to be hoisted to the second floor. The goods, if package, are stacked in the part of the room assigned to the particular kind of goods.

The specialties in kegs are placed on the 2 x 4 racks, previously mentioned, in another part of the room. The large drums are wheeled to the elevator on two-wheel hand trucks of the type that grips the drum at top and bottom so it cannot slide off.

A hand operated economy lift is used to raise the packaged articles to the top of the pile or rack where they are stored and to lower them to the floor when orders are to be filled.

In filling orders package goods are shot down a spiral chute which has its lower end on the first floor just inside the warehouse from the stake truck loading platform.

Barrelled or drummed products are loaded on an elevator at the end of the room opposite the end the goods entered it, and lowered to the loading platform. Products flow through the storage room in a line and do not double back on their path when they are being shipped out.

Among the specialties are liquid soaps, which have a large demand in the barber shops and beauty salons of the Cincinnati district. These soaps are received in drums from an eastern Pure Oil compounding plant and put into small packages for the trade.

The greases and other petroleum compounds are for general industrial as well as automotive use.

(To Be Concluded)

Oil Trademarks For Copyright

The following are trademark applications pertinent to our field pending in the United States Patent office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. trade-mark specialists.

As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

"PENN-VISS." Ser. No. 293,653. Apex Motor Fuel Co., Chicago, Ill. For motor-lubricating oil.

"HI-DECK." Ser. No. 292,782. Baash-Ross Tool Co., Inc., Los Angeles, Calif. For crown blocks for gas and oil drilling derricks.

"ISOTHERMOS." Ser. No. 291,092. Isothermos Corp. of America, New York City. For automatic lubricators and parts thereof.

"AL-N-OL." Ser. No. 290,536. Allen-Oliver Co., Los Angeles, Calif. For oil-well tools.

"SPECIFICATION," on a shield. Ser. No. 284,261. Joseph Andrew Chambers, Memphis, Tenn. For lubricating oils and greases and gasoline.

"SPECIFICATION." Ser. No. 287,867. Joseph Andrew Chambers, Memphis, Tenn. For lubricating oils and greases and gasoline.

"PURR PULL." Ser. No. 293,390. United States Refining Co., Los Angeles, Calif. For oils and greases or petroleum products such as gasoline, motor fuel oils and lubricating greases.

"GOLDEN ARROW," and representation of an arrow. Ser. No. 294,058. E. T. Crittenden, Denver, Colo. For gasoline, lubricating oils and greases.

"WM. PENN," and silhouette of Wm. Penn. Ser. No. 294,472. The Canfield Oil Co., Cleveland, Ohio. For lubricating oils.

"LOVIS." Ser. No. 294,831. The Texas Co., Wilmington, Del., and New York City. For petroleum products—viz, lubricating oils.

"OLD FAITHFUL." Ser. No. 294,973. Huegel-Nugent Petroleum Co., Chicago, Ill. For lubricating oil.

"NATIONAL," in an oval shaped figure. Ser. No. 276,213. National Tank Company, Tulsa, Okla. For flow tanks and fluid separator tanks for use in oil fields.

"P D M." Ser. No. 294,275. Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa. For metallic tanks for the storage of liquids, gases, and other products.

"CONOCO," and a triangular-shaped figure. Ser. No. 287,524. Continental Oil Co., New York City. For gasoline, motor-fuel oils, naphtha, kerosenes, lubricating oils, petroleum greases, etc.

"QUAKER STATE, THERE'S AN EXTRA QUART IN EVERY GALLON," representation of an oil can and a quart cup. Ser. No. 290,086. Quaker State Oil Refining Co., Oil City, Pa. For lubricating oils and greases.

"MOD-LAY BENZOL," drawing is lined for colors red and blue. Ser. No. 292,048. Red Indian Oil Company Inc., Detroit, Mich. For motor-oil fuel.

"TROP-ARTIC, IT SATISFIES FROM POLE TO POLE." Ser. No. 292,992. Independent Oil and Gas Co., Tulsa, Okla. For kerosene, gasoline, furnace oil, heating oil, and lubricating oils and greases.

"NOVOK." Ser. No. 293,282. Oil-Craft, Inc., Cincinnati, Ohio. For grease and lubricating oil compounds for gears.

ADVERTISING PAGES REMOVED

Premium Gasoline Puts Emphasis On Quality, Not Price

By Everett F. Wells*

THE tremendous increase in the use of so-called premium gasoline is one of the most remarkable recent developments of the oil industry.

Because special motor fuels usually sell at a premium of 3 cents per gallon and cost less than 3 cents extra to produce, the growth of their sales has kept many a refiners' balance sheet from showing red. In fact, many refiners depend upon making enough extra profit from their premium gasolines to offset their losses on ordinary gasoline.

Of even greater importance, however, is the fact that premium gasolines have tended to stabilize markets. They are less subject to price-cutting. No longer is gasoline "just gasoline," permitting the man with the lowest price to get most of the business. The appeal of quality has been substituted for price, and filling station men are gradually becoming salesmen.

In an industry which has been afflicted with almost every possible ill, beginning with overproduction of crude oil, too much refining, over-building of service facilities, price wars, and secret rebates, and now lease and agency agreements, the production and merchandising of premium gasolines is the most encouraging recent development.

Because of the fear of a shortage of both crude oil and gasolines during the later years of the war, "navy specifications" were changed to include gasolines with a relatively high distillation range. In fact, much of the gasoline sold during that period failed to meet navy specifications.

Three-way-blends of refinery gasoline, casinghead gasoline and kerosene were not uncommon. Automobiles had to be designed to operate on low-grade motor fuels which would lack, by a large margin, giving performance in today's cars.

It was probably because ordinary gasolines were of such low volatility that a demand arose for premium gasoline. The independent oil companies were the first to begin handling a second grade of gasoline and very often their special motor fuels sold at a premium of 10 cents per gallon over regular gasoline.

Although the first motor fuels that were sold at a premium were usually 68-70 straight run gasoline, it was later discovered that cracked gasoline, as well as blends of benzol and gasoline, took the carbon-knock out of motors and gave more power. At first there was a strong popular prejudice against cracked gasoline, because it was usually off-color and had a bad odor, but this prejudice

Everett F. Wells

was gradually overcome when it was found that it gave better performance.

The sale of special anti-knock motor fuels and the manufacture of higher compression motors developed together. It is difficult to say which was cause and which was effect, each one has been dependent upon the other.

It was only a few years ago that it became generally known that it was the increase in the compression ratio, resulting in pre-ignition of motor fuel, that caused the so-called carbon-knock and that the reason benzol and cracked gasoline did not knock so much as straight run gasoline was because they burned more slowly.

The next step was to find an artificial method of retarding the burning of motor fuels. To that end General Motors in its experimental laboratory at Dayton carried on extensive experiments and finally discovered that tetraethyl lead would accomplish their purpose.

It will be re-called that Ethyl fluid, originally, was mixed with ordinary gasoline at the pumps, and the Standard Oil group of companies was among the first to sell Ethyl gasoline, as it afforded them an opportunity for selling a premium grade of gasoline without the necessity of going to the tremendous expense of installing duplicate equipment at all their bulk stations, filling stations and curb locations.

Thus, the Independent jobbers lost one of the greatest advantages they had previously enjoyed over their larger competitors when many of the Standard Oil group of companies began marketing a premium motor fuel.

In the minds of the public, and especially in the case of automobile mechanics, the early use of Ethyl gasoline was associated with the burning out of valves, injury to pistons, etc. Unquestionably, there was some basis for that indictment. It seems to have been proven rather conclusively, however, that the fault was in no way due to Ethyl fluid, but because much of the gasoline that was ethylized had a high gum content.

The same factors in refining, which give cracked gasolines a high anti-knock rating, tend to give them high gum content. There was probably a tendency on the part of some refiners to take a chance on a high gum content along with a higher natural anti-knock rating.

At that time each cubic centimeter of lead cost 1 cent, and unless a refiner could meet the anti-knock standard of Ethyl gasoline without the use of a full 3 cubic centimeter of lead, there was no extra profit in the manufacture or sale of Ethyl gasoline.

It should be mentioned, though, that other anti-knock gasolines besides Ethyl gasoline experienced the same trouble with gum and the same complaints concerning burned-out valves, etc. The refiners had much to learn about such matters, but they have profited by their mistakes.

As already mentioned, Ethyl fluid, in the early days, was blended at the pump with ordinary motor gasoline. Thus, Ethyl gasoline at that time had

*Assistant sales manager of Ashland Refining Co., Ashland, Ky. Mr. Wells delivered this address on a recent tour of the 14 district petroleum clubs in Ohio.

only ordinary volatility and did not possess the qualities of a high-test gasoline. Automobiles, which did not show a tendency to knock, usually gave no better performance on Ethyl gasoline than on ordinary gasoline. Users of premium gasolines had learned to expect the easy starting qualities and quick acceleration of high test gasoline and often were disappointed when they tried Ethyl gasoline.

It was a small Independent refinery that first brought out a high test gasoline Ethylized. The success of the product was phenomenal; since then practically all the manufacturers of Ethyl gasoline and other anti-knock gasolines are producing motor fuels with a better volatility than ordinary gasolines.

Even in this day of high compression motors, it is probable that extra volatility is just as important in a premium gasoline as anti-knock rating.

Both vapor-phase cracking and the use of higher pressures in liquid-phase cracking have resulted in the production of pure petroleum motor fuels with high enough anti-knock rating to meet all ordinary present requirements. There are on the market today a great many such motor fuels, selling at premium prices, that give perfect performance in present-day cars.

Undoubtedly, motors of the future will have even higher compression ratios, and gasolines of still higher anti-knock value will be required.

As to whether such future motor fuels will be obtained principally by adding tetraethyl lead, or by further development of cracking and refining, will depend on costs. It is generally thought that the cost of tetraethyl lead, which already has been reduced in price by more than one-half, will be further reduced. Likewise rapid progress is being made in reducing the costs of cracked gasolines, as well as in increasing their anti-knock rating.

Probably at some future date all straight run gasoline will have to be treated to give it a usable motor knock rating and today's special motor fuels which show an average benzol equivalent of about 40 per cent will be considered quite ordinary products.

White gasoline, as we think of it today, will probably be in so little demand as to make its handling unprofitable. In fact, that is almost true now in some sections. Many stations in Ohio are showing more than 80 per cent premium gasoline sales, and it is reported that in December, 1929, Sohio Ethyl accounted for approximately two-thirds of all the gallonage at Standard of Ohio company-operated stations.

The experience of a jobbing company in Kentucky selling more than two-thirds of its total gallonage to curb pumps at garages and country stores illustrates this tendency even in the rural districts.

In January, 1929, premium anti-knock gasoline, retailing at 3 cents per gallon over their motor gasoline, accounted for about 33 1/3 per cent of its total gasoline sales. Its total gasoline gallonage for January, 1930, increased 16 per cent over that for January, 1929, but in January, 1930, premium anti-knock gasoline accounted for more than 50 per cent of its total gasoline gallonage.

> "THE premium gasoline customer is less likely to leave his accustomed place of buying gasoline when some nearby competitor offers a lower price. * * * Undoubtedly motors of the future will have even higher compression rations, and gasolines of still higher anti-knock value will be required. * * * It is impossible to definitely measure the extent to which the marketing of premium gasolines has been responsible for stabilization of markets and the encouragement of sound merchandising methods, but certainly it has been the salvation of many refiners and marketers."

In other words, its actual gallonage of ordinary motor gasoline decreased over 16 per cent, while the actual gallonage of premium anti-knock gasoline increased over 90 per cent.

New service outlets, by specializing in the sale of premium gasolines, have often been able to build up a comparatively large gallonage in a short time after their establishment. This has been particularly true of Chrysler agencies handling gasolines at their sales and service rooms.

The Chrysler "red head" motor, brought out in 1927, had a compression ratio of six to one, about the highest of any popular stock model that has been put on the market. Dealers, of course, recommended anti-knock gasoline to obtain the best possible performance. One Chrysler dealer in a town of approximately 30,000, who opened a new sales room with a service station in conjunction about the time the "red head" motors were brought out, built up in less than four months time through this single station a business which averages almost six hundred gallons per day the year round.

A high test Ethyl gasoline constituted 72 per cent of his total gasoline sales during the five months from September, 1929, to Feb. 1, 1930.

Premium gasolines have proven themselves well adapted to effective advertising, which has undoubtedly played a large part in the enormous increase in the consumption of them.

The demand made of automobile manufacturers has been primarily for cars that will give better performance and the advantages that premium anti-knock gasolines offer in this respect have been featured in a most appealing way. Since there has often been more profit in premium gasolines, they have been pushed by refiners and usually have borne a comparatively heavy advertising burden. Consequently, the marketer usually enjoys a created demand for them.

For the small Independent marketer, premium gasoline often offers the advantages of handling a nationally advertised or well known product such as the major companies enjoy and of Ethyl gasoline, the most widely advertised brand of anti-knock gasoline.

particularly is this true in the case

Marketers have found the business of their premium gasoline customers to be much more permanent; these customers are more loyal. Quite often during local price-wars when the price of ordinary gasoline has been reduced, marketers have left the price of their premium gasoline at its normal level without any noticeable decrease in their volume of sales.

The fact that customers are willing to pay a premium for gasoline is evidence that they are not primarily interested in price. They may buy premium gasoline because they find it more economical, everything considered, or because their car gives better performance with it, or just because their neighbors and friends use it, or for any one of a dozen other reasons, but obtaining the lowest price is not their sole consideration.

The premium gasoline customer is less likely to leave his accustomed place of buying gasoline when some near-by competitor offers a lower price.

The fact that the demand for premium gasolines is continuing to grow and the fact that it is usually more difficult to switch a customer who has been regularly using a satisfactory premium gasoline to another product behooves the marketer to begin obtaining his share of the premium gasoline business as it is developing, because it will probably be a much more difficult task to get it later.

The use of premium gasolines may grow to the point where the volume of ordinary gasoline will not only be so small as to be unprofitable, but it may also be a reflection upon the marketer not to handle a satisfactory premium gasoline.

The tendency to imitate or go where the crowd goes is an important factor in the selling of many commodities. In fact, one of the largest factors in the oil business is reported to be seriously considering an advertising program based primarily upon such an appeal.

It is to be hoped that the stabilization of markets and the encouragement of sound merchandising methods

For QUICK SERVICE

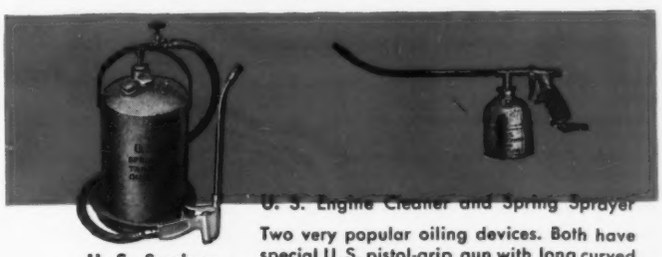
GREASING

WITH a one-man, quick service operation that has no equal for thoroughness and cleanliness, the U. S. Electro Hy-Press Grease Gun has shown thousands of car dealers, service stations, and garages how to boost lubrication profits.

Operators have been amazed by its power and speed. Tremendous pressure is created on frozen bearings, and maintained without further operation of greaser while one hand is always free to rock car or operate hand bar. A touch on the electric control button conveniently located on grease hose, gives instant stopping and starting and perfect control of grease. Less grease is used and cleaner jobs are possible. Fast pumping for filling universal or steering column is a great time-saving feature.

The U. S. Grease Gun works equally well in coldest weather or summer time because grease is kept at easy working temperature by heat generated by the compressor. Unlike outfits that require an outside supply of compressed air, this unit is complete with a self-contained air compressor. Broad steel wheels make it portable over rough ground. Light weight, flexible hose is easy to handle. It is licensed by Alemite and equipped with Alemite and Zerk couplers. In average use, it costs six to ten cents per day electric current, to operate. Prices and illustrated bulletins on any U. S. Equipment will be gladly sent without obligation.

U. S. Electro Hy-Press Grease Gun



U. S. Spring Tank Oiler

U. S. Engine Cleaner and Spring Sprayer

Two very popular oiling devices. Both have special U. S. pistol-grip gun with long curved nozzle—no oil wasted, no soiling of car.

U.S. AIR COMPRESSOR COMPANY

5314 HARVARD AVE. · CLEVELAND, OHIO

West Coast Branch: 433 West Pico Street, LOS ANGELES, Calif.
Canadian Office: 8 Colborne Street, Dist. 2, TORONTO
Export Department: 30 Water Street, NEW YORK CITY
CABLE ADDRESS: WIDBLOCO, All Codes

AIR Compressors, Paint Spray Units, Car Washers, Grease Guns

which have been brought about through the marketing of premium gasolines will continue in the future. It is impossible to definitely measure the extent to which the marketing of premium gasolines has been responsible for this improvement, but certainly it has been the salvation of many refiners and marketers.

Many engineers and technical authorities predict surprising economics which will be made possible by the use of premium gasoline with even higher anti-knock ratings than those common today, which would greatly stimulate the consumption of premium gasolines. Some of these have even demonstrated the plausibility of their contentions by successful experiments under actual working conditions.

If refiners and marketers properly appreciate the good that premium gasolines have already done from a marketing standpoint, it would not seem too much to expect them to exert their efforts toward retaining these advantages in the future.

New Stations Building

Note: Material used in this column is principally taken from the newspapers. NATIONAL PETROLEUM NEWS assumes no responsibility for its accuracy.

The list as published from week to week cannot be looked upon as indicative of the relative extent to which stations are being built in various parts of the country.

Little Rock, Ark.—Louisiana Oil Refining Co., filling station.

Cincinnati, O.—Refiners Oil Corp., filling station.

Ironton, O.—Tri-State Refining Co., filling station.

Lima, O.—Standard Oil Co., filling station.

Dubuque, Ia.—Mid-Continent Petroleum Corp., filling station.

De Witt, Ia.—B. B. Herr, service station.

Manchester, Ia.—Sinclair Refining Co., service station.

Logan, O.—Charles F. Lewis, service station.

Bryan, O.—G. J. Oestreicher, filling station.

Ravenna, O.—C. Z. Aughenbaugh & C. R. Jones, service station.

Cleveland, O.—Standard Oil Co., service station.

Forest City, Ia.—B. A. Nelson, filling station.

Guthrie, Okla.—Empire Oil & Refining Co., filling station.

Kansas City, Mo.—Standard Oil Co., service station.

Forrest City, Ark.—Louisiana Oil & Refining Co., filling station.

San Angelo, Tex.—J. D. Blocker, service station.

Columbia, Mo.—Shell Petroleum Corp., service station.

El Paso, Tex.—Magnolia Petroleum Co., filling station.

Beaumont, Tex.—Shell Petroleum Corp., bulk and filling stations.

St. Charles, Mo.—Standard Oil Co., filling station.

Springfield, Mo.—M. F. A. Oil Co., filling station.

Springfield, Mo.—Mid-Continent Petroleum Co., filling station.

Boonville, Mo.—Skelly Oil Co., service station.

Sterling, Colo.—Midwest Refining Co., service station.

Smithville, Tex.—The Eagleston Estate, filling station.

Alamosa, Colo.—Continental Oil Co., service station.

Helena, Ark.—Specification Motoroil Co., filling station.

Houston, Tex.—Cities Service Oil Co., service station.

Oklahoma City, Okla.—Sloane-Forsberg Oil Co., filling station.

Atlanta, Ga.—Shell Petroleum Corp., filling stations.

Charlotte, N. C.—W. R. Shore and T. C. Wilson, filling station.

Covington, Va.—Harvey System, Clifton Forge, filling station.

Minneapolis, Minn.—The Texas Co., filling station.

Shelby, Mont.—Shell Oil Co., filling station.

Twin Villages, Minn.—Standard Oil Co., filling station.

Litchfield, Minn.—White Eagle Oil & Refining Co., filling station.

Oakland, Calif.—Myer Elgarten, service station.

Martin, S. D.—Phillips Petroleum Co., service station.

New England, N. D.—Standard Oil Co., filling station.

Canton, O.—Shell Petroleum Corp., service station.

Wheeling, W. Va.—Sterling Oil Co., filling station.

Huntington, W. Va.—Standard Oil Co., filling station.

Youngstown, O.—Firestone Tire & Rubber Co., bulk station.

North Platte, Neb.—F. Streitz, filling station.

Cardwell, Mo.—Barnsdall Refineries, Inc., filling station.

St. Louis, Mo.—Trackage Oil Co., filling station.

Springfield, Mo.—Continental Oil Co., filling station.

Dodge City, Kans.—Bloom Co-Operative Oil Co., filling station.

Jonesboro, Ark.—Sinclair Refining Co., filling station.

Estherville, Ia.—Standard Oil Co., filling station.

Stuart, Ia.—Standard Oil Co., service station.

Houston, Tex.—Humble Oil & Refining Co., service station.

Dodge City, Kans.—White Eagle Oil & Refining Co., filling station.

Salina, Kans.—Skelly Oil Co., filling station.

Lyons, Kans.—Standard Oil Co., filling station.

Gilmer, Tex.—Humble Oil & Refining Co., filling station.

Longview, Tex.—Humble Oil & Refining Co., bulk and service stations.

Mason City, Ia.—Shell Petroleum Corp., filling station.

La Crosse, Wis.—Firestone Tire & Rubber Co., service station.

Tabor, Ia.—Shell Petroleum Corp., filling station.

Faribault, Minn.—Shell Petroleum Corp., filling station.

Faribault, Minn.—White Eagle Oil & Refining Co., filling station.

Faribault, Minn.—National Refining Co., filling station.

Britt, Ia.—Champlin Refining Co., filling station.

Britt, Ia.—Ray Morris, service station.

Huron, S. D.—Firestone Tire & Rubber Co., service station.

Paterson, N. J.—Daniel Berse, filling station.

Newark, N. J.—Peerless Oil Co., filling station.

Newark, N. J.—Anthony Carrasino, filling station.

Biloxi, Miss.—Woco Pep Oil Co., filling station.

Gastonia, N. C.—Shell Petroleum Corp., filling station.

Jersey City, N. J.—David Andres & Harold Keith, filling station.

Jersey City, N. J.—John Ristine, filling station.

Paterson, N. J.—Mexican Petroleum Co., filling station.

Gulfport, Miss.—Woco Pep Oil Co., filling station.

Natchez, Miss.—E. R. Ratcliff, service station.

Buffalo, N. Y.—William Ellerstein, filling station.

Jacksonville, Fla.—Shell Petroleum Corp., filling station.

Belfast, Me.—The Texas Co., service station.

Brooklyn, N. Y.—Perry Spring Corp., service station.

Utica, N. Y.—E. J. Fletcher, filling station.

Canton, O.—The Duquesne Oil Co., service station.

Little Rock, Ark.—Louisiana Oil Refining Co., filling station.

Fredonia, Kans.—Phillips Petroleum Co., service station.

Ft. Recovery, O.—Earl and Ross Stone, filling station.

Mexia, Tex.—J. W. Elliott, filling station.

Waterloo, Ia.—Master Service Co., Inc., service station.

Topeka, Kans.—Long Oil Co., service station.

El Paso, Tex.—W. E. Pofahl, service station.

Ft. Worth, Tex.—Firestone Tire & Rubber Co., service station.

Nebraska City, Nebr.—Johnson & Martin filling station.

Arkansas City, Kans.—Independent Oil Co., service station.

Carrollton, Mo.—Phillips Petroleum Co., filling station.

Cleveland, O.—Standard Oil Co., filling station.

Bryan, O.—G. J. Oestreicher, filling station.

Little Rock, Ark.—Dr. E. Meek, filling station.

Winona, Minn.—Winona Oil Co., filling station.

Alexandria, Minn.—Standard Oil Co., filling station.

Rice Lake, Wis.—Service Oil Co., filling station.

Billings, Mont.—Midwest Refining Co., service station.

Kansas City, Mo.—J. W. Storms, filling station.

Moscow, Kans.—Standard Oil Co., service station.

Beloit, Kans.—Wilcox Oil Co., service station.

Mansfield, O.—Standard Oil Co., service station.

Okeene, Okla.—Champlin Refining Co., filling station.

San Antonio, Tex.—C. M. Crofton and R. E. Hubbard, filling station.

Norton, Kans.—Continental Oil Co., filling station.

Waxahachie, Tex.—Humble Oil & Refining Co., filling station.

Afton, Wyo.—G. W. Yeaman and O. E. Seymour, service station.

Salina, Kans.—Phillips Petroleum Co., service station.

Osceola, Wis.—Sterling Oil Co., filling station.

Boulder, Colo.—Starkey Automatic Gas Station Co., filling station.

Minneapolis, Minn.—Otto Mahler, filling station.

Minneapolis, Minn.—R. H. McGuffie, filling station.

Virginia, Minn.—Cities Service Oil Co., filling station.

Alma, Kans.—R. Lee, filling station.

Independence, Kans.—Sinclair Refining Co., filling station.

Esterville, Ia.—Standard Oil Co. filling station.

Pine Bluff, Wyo.—Midwest Refining Co., filling station.

Zanesville, O.—J. A. McCune & Son Co., service station.

Philadelphia, Pa.—Vacuum Oil Co., service station.

Philadelphia, Pa.—Charles Kahn, filling station.

Findlay, O.—Haddad Stores, Inc., service station.

Clarinda, Ia.—Farmers Union Co-op Shipping Assoc., filling station.

POWERFUL PULLERS

THE unmistakable, and NOTICEABLE superiority of Super-Ratio Motor Fuel over ordinary gasoline has been proven by thousands of motorists. The Super-Ratio Emblem carries with it the reputation of a Quality Gasoline—in the truest sense of the word—a distinctly BETTER KIND of gas.

Add the prestige of the Super-Ratio Emblem to the personal confidence and good will represented by YOUR OWN NAME. Display the two where all can see—YOUR NAME and the SUPER-RATIO EMBLEM—leave them to do their work . . . and watch the steady stream of customers drawn to them —POWERFUL PULLERS at the point of sale.

Super-Ratio is a High-Compression, Anti-knock fuel for modern day high-compression motors. For the man who wants "knock" eliminated. For your customers who want The Best. Other popular grades carried always in stock are:

58-60 U. S. MOTOR UNDER 430 END POINT.
60-62 UNDER 400 END POINT.
64-66 HIGH TEST UNDER 375 END POINT.

KEROSENE
GAS OIL

DISTILLATE
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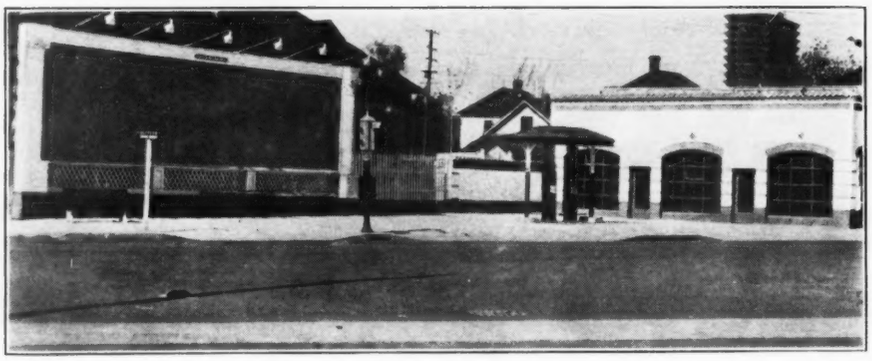
Write or wire for Quotations

THE DERBY OIL COMPANY
WICHITA, KANSAS



Sign Board Is Feature Of Rio Grande Station

LOS ANGELES

A SERVICE station that has an advertising billboard as its outstanding feature, has been erected by the Rio Grande Oil Co. on one of the most heavily traveled thoroughfares of Los Angeles.

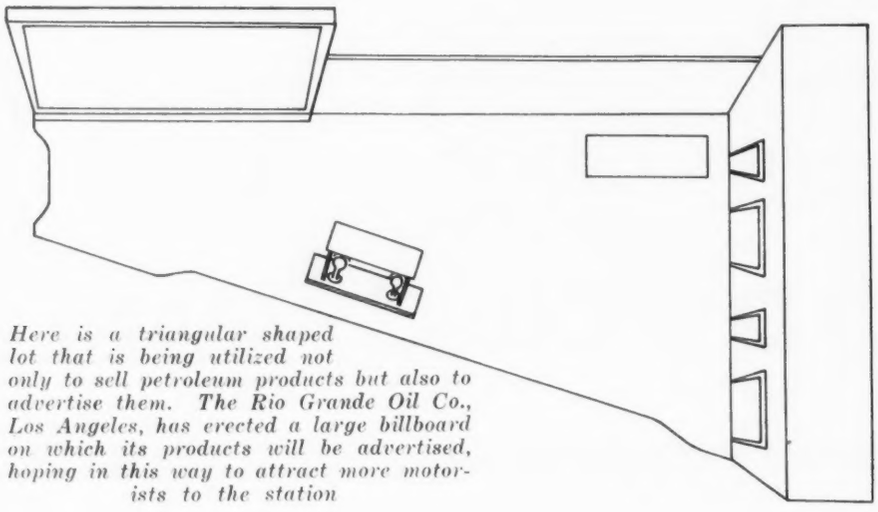
Because of the high property values on this highway, the billboard was erected to advertise the company's products, thereby offsetting some of the cost, according to Leonard M. Brin, of the advertising department. It is equipped with a neon sign pointing to the station, which is a narrow building constructed across what might be called the base of the triangle.

The station is at the long end and the sign at the narrow end of the lot. Two open sides afford ingress and egress to the lot. There are two pumps on an island located so that cars may be served quickly from either side. One combination pump dispenses both gasoline and lube oil. Eight storage tanks are buried underground.

The station lot is surfaced with patented street paving material, selected for its non-glare and long wearing qualities, and because it affords a good contrast to the white building.

The building is of natural red brick, acid treated. The company's colors, blue, white and red, are used.

Long narrow boxes of flowers add beauty to the station site.



Here is a triangular shaped lot that is being utilized not only to sell petroleum products but also to advertise them. The Rio Grande Oil Co., Los Angeles, has erected a large billboard on which its products will be advertised, hoping in this way to attract more motorists to the station

More Sell-Outs of 1929 For Six States

CLEVELAND, Jan. 10.—Sells out in 1929 of oil marketing companies in six states and the District of Columbia, as compiled by secretaries of state jobber associations are listed below. This list supplements that compiled by an oil association, and published in NATIONAL PETROLEUM NEWS, Nov. 20 issue, page 89.

Georgia

Wofford Oil Co.—United Oil Co., Valdosta.

Pure Oil Co.—Fincher-Traylor Oil Co., LaGrange.

Iowa

Shell Petroleum Corp.—Oto Oil Co., Oto; Milheim Oil Co., New Hampton; Sprague-Denny Oil Co., Spencer.

Standard Oil Co.—Rock City Oil Co., Winterset.

Champlin Refining Co.—Delta Oil Co., Delta; Coon Rapids Oil Co., Coon Rapids; Franklin County Oil Co., Hampton.

Mid-Continent Petroleum Corp.—Clarion Oil Co., Clarion.

Farquhar Oil Co.—Griffey Oil Co., Orient.

Texas Oil Co.—Barber Service Station, Jefferson.

Phillips Petroleum Co.—Hart Short Oil Co., Independence; Primary Oil Co., Charles City.

Transcontinental Oil Co.—McCoy Oil Co., Fort Dodge.

Shaffer Oil & Refining Co.—Purity Oil Co., Charles City.

Ohio

Pennzoil Co.—Arrow Gasoline, Salem; Brandon Oil Co., Youngstown; Champaign Oil Co., Urbana; Fisher Oil & Gas, E. Liverpool; C. H. Wagoner Oil Co., Zanesville; Medina Oil Co., Medina.

Indian Refining Co.—Delaware Oil & Gas, Delaware.

Sun Oil Co.—Hugh Hamilton, Youngstown.

Louisiana Oil & Refining Co.—Leight Service Station, Middletown.

Sinclair Refining Co.—Miami Oil Co., Troy.

H. G. Battenhouse—Amherst Oil Co., Amherst.

Citizens Oil & Gas Co.—Central Service Station, Massillon.

Warren Petroleum Products Co.—Guarantee Gas & Oil, Warren.

Rogers Oil Co.—Lorain Oil Co., Lorain.

Ashland Refining Co.—Meigs Oil & Gas, Pomeroy.

Highlands Oil Co.—Fenner Bros., Hillsboro.

Oklahoma

Mid-Continent Petroleum Corp.—Grove Motor Co., Grove; Rummage Oil Co., Claremore.

Champlin Refining Co.—Acree Oil Co., Norman.

Independent Oil & Gas Co.—Blackwell Independent Oil Co.; J. O. Hill, Oklahoma City.

Tennessee

Apex Oil Corp.—Paris Oil Co., Paris.

Shell Petroleum Corp.—W. M. Tatom, Inc., Nashville.

Virginia

American Oil Co.—C. D. Jenkins Oil Co., Richmond; Valley Oil Co., Waynesboro.

Republic Oil Co.—Red Star Oil Co., Arrington.

Pure Oil Co.—South Atlantic Oil Co., Norfolk.

Continental Oil Co.—Mylex Oil Co., South Washington.

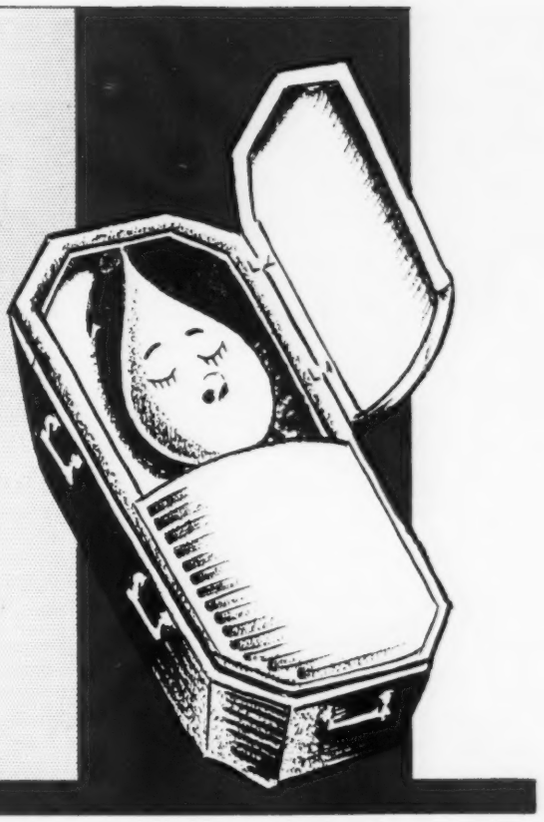
District of Columbia

Shell Petroleum Corp.—Penn Oil Co.

National Oil Co.—Crown Oil & Wax Co.

ADVERTISING PAGES REMOVED

A drop of gasoline dies when it reaches the combustion chamber in the motor. Every drop of Silencer gives gigantic power, then dies without a knock—completely gasified, completely burned. Your customers will get no knocks with Silencer. And the only knocking you'll hear is new and repeat business at your door. Wire the Anti-Knock Specialists today.

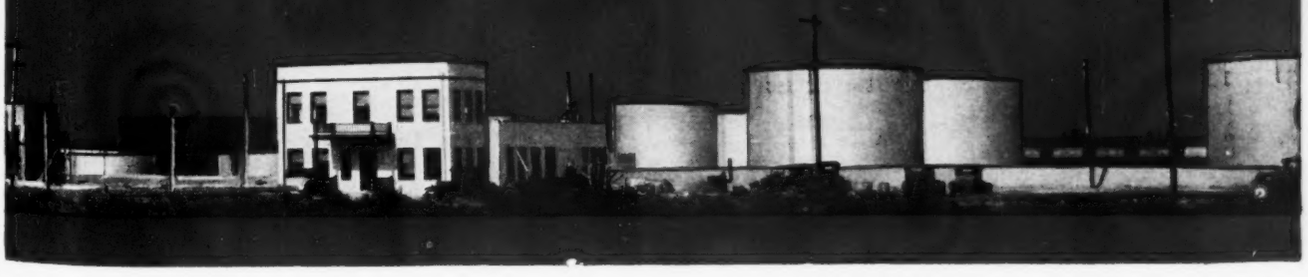


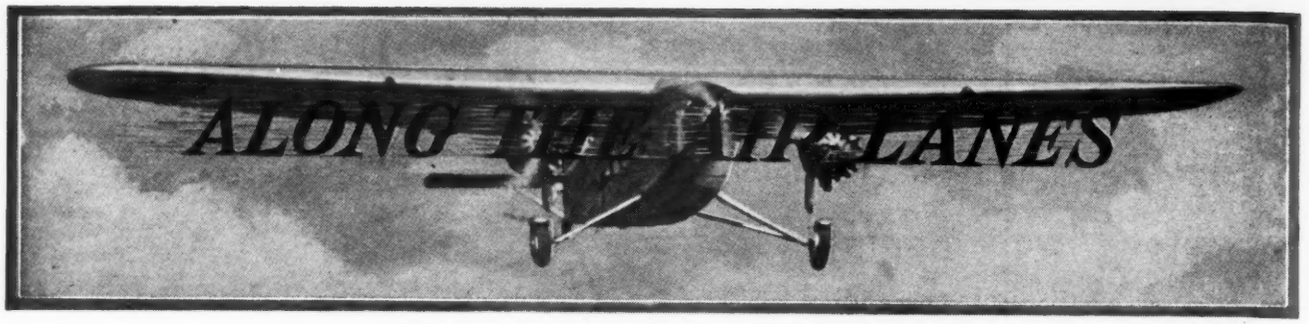
DIES DUMB

GASOLINE

OIL COMPANY

General Sales Office, TULSA TRUST BLDG., TULSA, OKLA. Refinery, PECOS, TEXAS Branch Sales Office, Plymouth Bldg., MINNEAPOLIS, MINNESOTA





AN AIRPLANE of the Continental Oil Co., Ponca City, Okla., proved valuable recently in locating quickly a leak in a gas main of the Ponca City Gas Distributing Co., subsidiary of the Continental.

The 15 mile line between Burbank and the Grey Horse field had sprung a leak somewhere and gas was escaping.

Immediately upon receipt of word from the field, Al Janke, assistant superintendent of the gas division, hopped into Conoco plane No. 2 and flew over the route of the line. In some 15 minutes, he noticed a spot where soil and snow had been mixed on the surface and was thus able to locate the leak. A few hours later a crew of men had repaired the leak.

Commenting on the wide use of airplanes by oil companies in geological survey work, the U. S. Bureau of Mines says that in the period since 1927, more than 5000 square miles of territory have been mapped from the air for oil producing companies in the western part of the United States alone.

Otis Hoyt, Long Beach, Cal., oil operator, is vice president of the Aerial Express Corp., Ltd., recently formed to transport freight and express between Seattle and San Diego. The line is said to be the first exclusively freight carrier of its type in the world.

Judge E. D. Reiter, attorney and counsel for the California Oil industry, and chairman of the Kettleman Hills conservation committee, recently used his Waco plane in a hurry flight to Las Vegas, Nev. from Los Angeles.

The Judge, when asked if he did not look upon his "ship" in the same light that an Arab looked upon his horse, replied; "Yes, but at the same time that I am admiring its speed and graceful lines, I always have a strong feeling that it is doing its utmost to plaster me over the landscape."

With more than 5000 of its steel buildings in use in various industries throughout the country, the Esline Co., Oconomowoc, Wis., has found another large consumer of its product in aviation.

That company is now building portable steel airplane hangars, which are fire proof and weatherproof, and which can be taken down and removed to another location.

The company started in business 20 years ago, making first only small garages. It now makes steel buildings for many other purposes, including filling stations. One of its important services is the manufacture of buildings to meet the customer's specifications, and its engineering department will submit detailed plans and specifications on any building that a customer may desire.

The all-steel airplane hangar is much in demand today, the company says, inasmuch as many airports are established on leased ground and the portable steel hangar can be readily removed without depreciation.

Phillips "77" aviation gasoline, at the rate of 5000 gallons daily minimum, will be used exclusively in mail and passenger ships of the Universal Aviation Corp., a division of the American Airways, Inc., according to Billy Parker, manager of the aviation department of the Phillips Petroleum Co., Bartlesville, Okla.

The Universal system is the largest unit of the American Airways company and its planes fly 15,000 miles daily. The company's gasoline consumption during 1930 is estimated to exceed 2,000,000 gallons.

One of the most interesting oil company displays at the International Aircraft Exposition held in St. Louis in February was that of the Shell Aviation Corp. The display occupied two booths and included models of airplanes to indicate the progress made in air transportation.

Motion pictures depicting the various flights of the "Gold Shell," company owned airplane, were shown continuously. In attendance at the booth were the company's aviation staff, which includes Lieut. James H. Doolittle, head of aviation activities; Grover C. Olds, James Haizlip, Rex

(*Continued on Page* 99)

An all-steel portable airplane hangar erected at Kohler, Wis. for Walter J. Kohler, Governor of Wisconsin, by the Esline Co., Oconomowoc, Wis., manufacturer of steel portable buildings for various purposes

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(*Continued from Page* 94)

Brashear, and Milton Girton, all pilots for the Shell company.

Three days' time to get from New York to Philadelphia, a distance of 85 miles, was the guarantee given by the first regular stage-coach put into service between those two cities in 1758.

Modern aircraft traverses this distance easily in less than an hour!

Wasp-motored Ryan brougham has been purchased by the Cree & Hoover Drilling Co., Amarillo, Tex. to be used for transporting supplies quickly to oil fields and also for transportation of executives. B. L. Hoover, in charge of drilling operations, expects to obtain a license soon so that he can pilot the plane.

The Union Oil Co. recently purchased its fourth Travel airplane, one of the new J-5 type. Each airplane of the company travels an average of 5000 miles per month, C. F. Lienesch says.

An advisory aviation department which will furnish, free of charge, any information on selection of airport sites, methods of conditioning and surfacing of such airports, cost data, and any other pertinent information, has been organized by the Richfield Oil Co. of California, Los Angeles, as a part of its aviation department. That division is in charge of Capt. E. L. Curtis, as chief engineer, who was formerly associate airways engineer of the U. S. Department of Commerce at Washington. It is operating as the service division of the aviation department.

This kind of consulting service will be furnished to communities and air transport operators, aviation schools and other organizations interested in aviation. Plans and specifications for airports will also be furnished as a part of this service, according to C. B. Garretson, vice president.

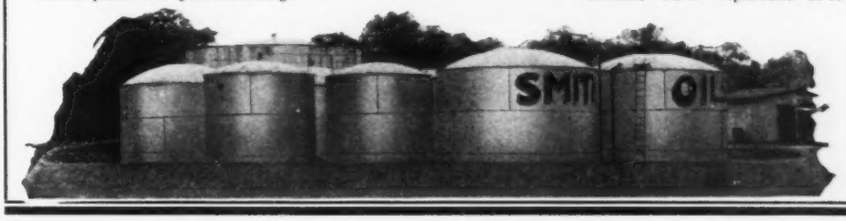
Capt. E. L. Curtis

Bulk storage units—field erected

Since ordinarily they cost less than several riveted-up tanks with the same capacity, field erected tanks provide economical bulk storage. These flat-bottom tanks do not require extensive foundations. Ask our nearest office for booklet on storage tanks or quotations on sizes you contemplate installing.

CHICAGO BRIDGE & IRON WORKS

New York—3145 Hudson Terminal
Cleveland—2206 Union Trust Bldg.
Chicago—2125 Old Colony Bldg.
Philadelphia—1614 Jefferson Bldg.
Detroit—1513 Lafayette Bldg.
Boston—1516 Consol. Gas Bldg.
Dallas—3339 Magnolia Building
San Francisco—1060 Rialto Bldg.
Birmingham—1534 50th Street, N.
Atlanta—1050 Healey Building
Havana, Cuba—Apartado 2507



PETROLEUM PRODUCTS
From All Fields

Carloads, Tank Cars, and Cargoes
For Domestic or Export

GASOLINE KEROSENE NAPHTHA
CRUDE OIL FUEL OIL GAS OIL FURNACE OIL
CYLINDER STOCKS
UNFILTERED AND FILTERED
BRIGHT STOCKS
COLD SETTLED AND CENTRIFUGED
PALE—RED OILS
WAX—PETROLATUM
TECHNICAL WHITE OILS
WHITE MINERAL OILS

For 35 years of reliability, service and integrity—this Company enjoys an International Reputation

JAMES B. BERRY SONS' CO., INC.
General Office—Oil City, Pa.

District Offices at
New York, Philadelphia, Boston, Chicago
London—Hamburg

Cable Address—JASBER Oil City *All Codes*

MIGHTY PRODUCER OF CLEAN AIR

The 'Dayton' Two-Stage 'G' Air Compressor

ONE of the radio group refers to its product as 'the mighty monarch of the air'.* We like the ringing sound of that claim, so we are calling this particular 'G' Line of Dayton Air Compressors, 'Mighty Producers.'

This two-stage producer of volume of compressed air, in a constant flow, as desired, is the last word in compressor construction. Nothing in its makeup to cause trouble. The only two-stage type of Air Compressors in the world in which you will find

No Connecting Rods —
No Crosshead Pins —
No Cotter Pins —
No Bolts

NOTHING TO BREAK DOWN AND SCORE THE CYLINDER

*Apologies to Grigsby-Grunow Co., Chicago, Ill.

THE DAYTON
G-8

2 H.P. Motor—
60 Gal. Tank—
150 lbs. capacity—
8 Cub. Ft.
of Clean
Air Each
and
Every
Minute

Get a
'G' Bulletin

DAYTON AIR COMPRESSORS

425 Valley St. Dayton, Ohio

STEEL
DRUM ACCESSORIES
CORPORATION

Buffalo, New York

Specialists in Drum Faucets and Gates

Specify
the "BLUE" *Gate*
and our various types of *DRUM FAUCETS*
for all purposes.
We solicit your inquiries for detail information.

On The Lazy Bench

Excuse It, Please

Guest: "Gosh, but I'm thirsty!"
Hostess: "Just a minute and I'll get you some water."
Guest: "I said thirsty—not dirty."

—The Gas Line

* * *

Stenographer: "How ja spell 'sense?'"
Employer: "Dollars and cents, or horse sense?"
Stenographer: "Well, like in 'I ain't seen him sence'—"

—The Loreco Diamond

* * *

I never see a fire-wagon dashing through traffic that I don't wonder whether the brave laddies are speeding to a big fire or if they are rushing back to an unfinished checker game.

—The Piper

* * *

"Give the principal parts of the verb 'swim.'"
"Swim, swam, swum."
"Good. Now give the principal parts of the verb 'dim.'"
"Aw, quit your kiddin.'"

—Magnolia Oil News

* * *

Two Pennzoil stenographers were planning for the holidays.
"Minnie," said one, "would a long stocking hold all you'd want at Christmas?"
"No, Katherine," responded the other, "but a pair of socks would."

—The Pennztoiler News

* * *

"Hello Jake," said the farm hand. "Why ain't you comin' to the weekly dances down at the range hall?"
"Ho, ho, dances!" said Jake. "I could never learn to dance."
"You could too. It's dead easy," replied the farm hand. "All you got to do is to keep turnin' around and wipin' yer feet."

—Mid-Continent Petroleum Courier

* * *

A modern girl is one who can meet the wolf at the door and come out with a fur coat.

—The Piper

* * *

Calling Papa's Bluff

Old Man: "Are you sure that you can give my daughter all the luxuries to which she is accustomed?"
Suitor: "I ought to; I'm the one who accustomed her to them."

—The Gas Line

* * *

This from the Tampico Tribune, a periodical published in a land where Volsteadian restraints are lacking:
People who live in glass houses shouldn't throw parties either.

* * *

The ferry boat was late and was docked.

—En-ar-co National News

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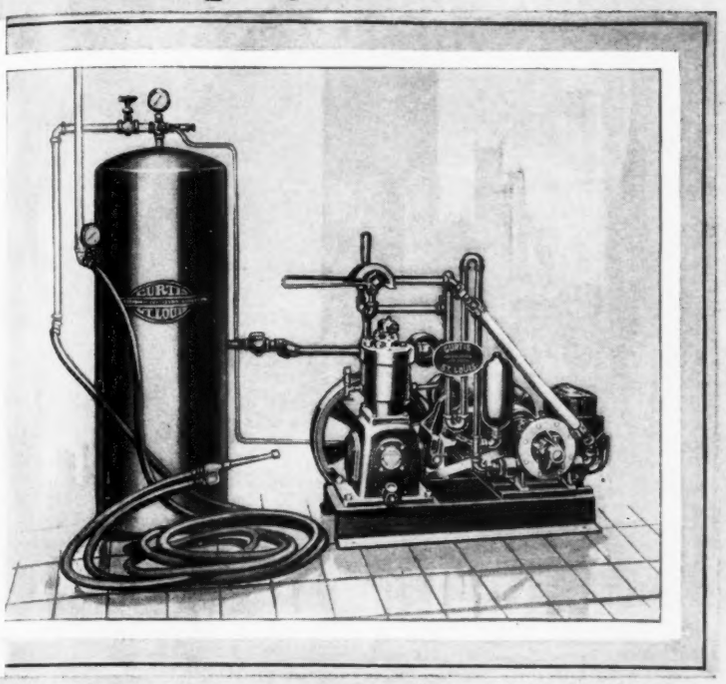
brings a big step-up
station profits



Both Hydraulic and compressed air types:—Making both the *Hydraulic* and *Compressed Air* types, Curtis is without prejudice in recommending the most suitable type...the Compressed Air Washer for complete cleaning service, or the Hydraulic Washer for those not requiring the additional air facilities of the Curtis Air Washer.

The Curtis Air Washer [shown above] not only affords rapid and thorough washing but its powerful Curtis-built, Timken Bearing Compressor provides air for cleaning engines, vacuum cleaning upholstery, speedy air drying of washed cars, tire inflation, pressure lubrication, paint spraying, operation of auto lifts and any number of other cost-reducing and profit-making operations.

A booklet on super-service profits: — giving interesting details will be sent upon request.

St. Louis

Curtis Pneumatic Mchy. Co.,
1965 Kienlen Ave., St. Louis—518X Hudson Term., N.Y.

Please send catalog and information about [State product you are interested in] _____

Name _____

Address _____

Deducting the Gas Tax From Taxable Income

WASHINGTON, March 28.—Although income tax returns for 1929 have been made, it may be useful to review the rulings of the Bureau of Internal Revenue as to who is entitled to deduct gasoline taxes from their taxable income, especially in view of the fact that some believe there is conflict in the rulings.

The general rule is that he who pays the tax is entitled to deduct it from his personal income tax return, if the tax has not been deducted as an expense of doing business.

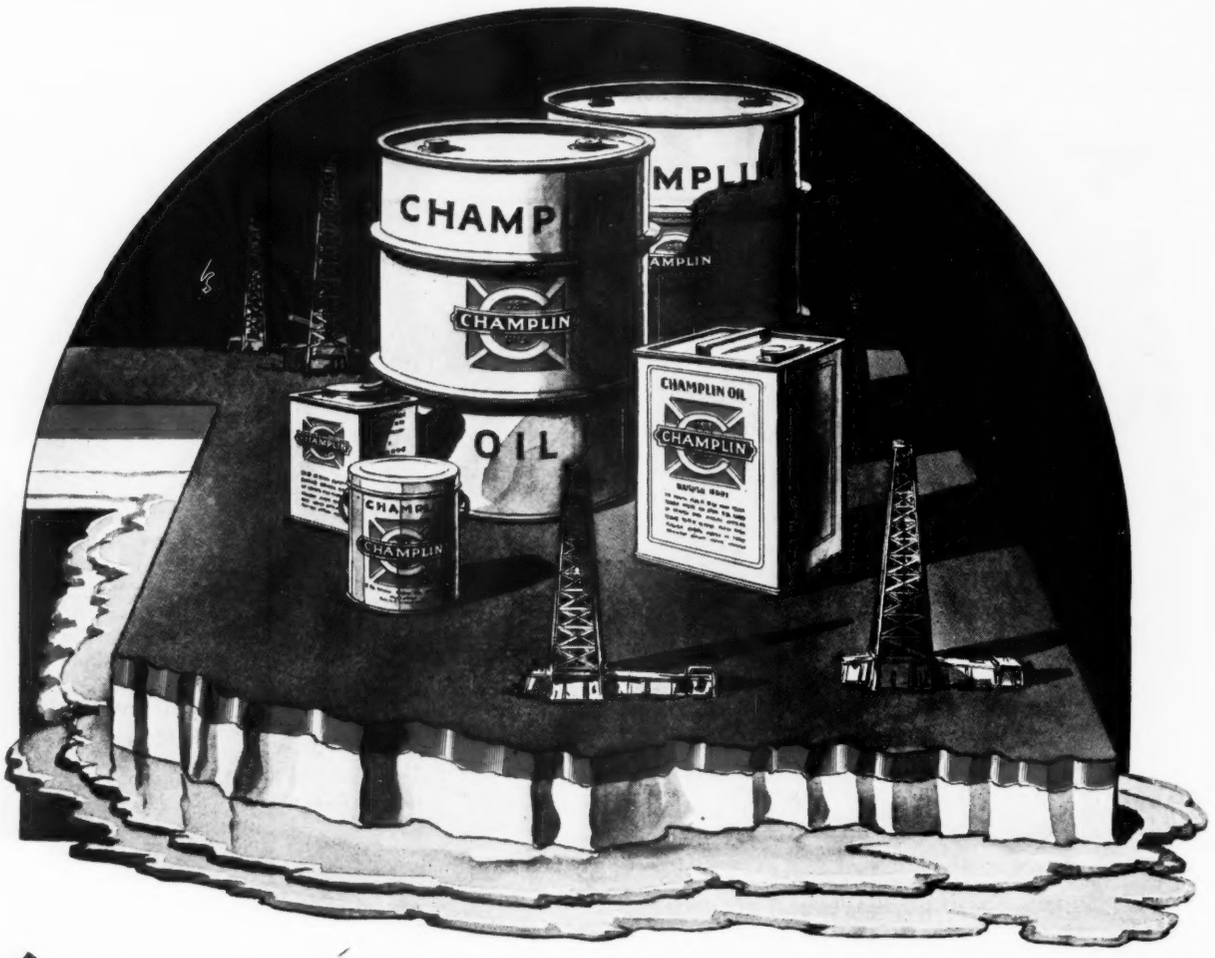
State statutes have to be construed by the Bureau in arriving at a conclusion as to the identity of the person paying the tax, in each state where a question is raised. The statutes of twenty-six states have been so construed. Nineteen permit the consumer of the gasoline to claim an exemption on account of such tax payments. They are Michigan, Virginia, North Carolina, Kentucky, New York, Delaware, Missouri, South Dakota, Wisconsin, Illinois, Pennsylvania, Washington, Rhode Island, Maryland, Massachusetts, Kansas, North Dakota, District of Columbia and Indiana.

Alabama, Connecticut, Nebraska, Ohio, Georgia, Tennessee and Wyoming laws permit the distributors to make the deduction. The difference is due entirely to the language of the statutes. The language of the 19 states allows the consumer to make the deduction. The laws of the seven are such that the distributor is the one entitled to claim the exemption, the wholesaler in Wyoming being the beneficiary. In those states the tax is called an imposition on the business of distributing the motor fuel. In the other 19 the tax is called a consumption tax. The first ruling as to the Maryland statute was that it was an occupation tax but that was overruled by the bureau when it said it was a consumption tax.

NEW YORK, March 27.—Continental Can Co., Inc., here announces several important changes among its executives, including the resignation of Thomas G. Cranwell, who has been chairman of the board of directors. Mr. Cranwell wished to be relieved of all active duty.

Carle C. Conway, formerly president, has been elected chairman of the board. O. C. Huffman, vice president, has been made president. All other officers have been re-elected.

CLEVELAND, March 27.—Properties of the Caravan Oil & Refining Co. with a refinery at Oklahoma City, are reported purchased by Victor H. Smith of the Gulf States Terminal & Transport Co. The plant will be operated by the newly organized Gulf States Petroleum Co.



A 100% PARAFFIN BASE OKLAHOMA PRODUCT

Champlin Motor and Tractor Oils are refined from 100% paraffin-base, Oklahoma Crude. The specifications which are followed in the refining process produce oils of a full and lasting body. They do their lubricating job thoroughly and faithfully during their period of service in the crankcase of motor cars, trucks and tractors, preserving their good qualities safely beyond the allotted time for changing, in case of emergencies.

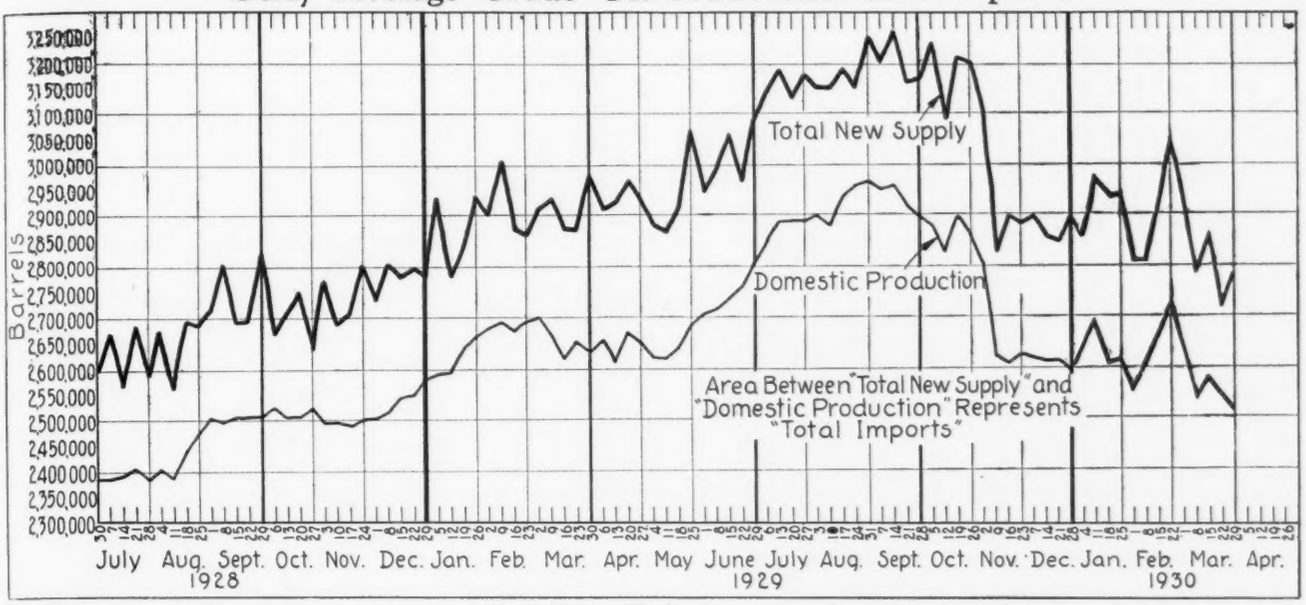
Such emergencies need seldom arise, however, for Champlin dealers and jobbers are widespread, a loyal band under a popular trade mark, supplying the needs of Champlin customers everywhere. Particularly among farmers is the demand felt, four-fifths of Champlin's output going to farm communities. Popularity among farmers, where correct fuels and lubricants are a matter of business, is best evidence of the long-standing excellence of all Champlin Products.

Champlin Oils are available with a Zero Cold Test, assuring satisfactory operation in very cold weather. Keep low cold test oils on hand until winter has had its last fling. Wire, write or phone the CHAMPLIN REFINING COMPANY, Enid, Oklahoma.

ZERO COLD TEST

CHAMPLIN

Daily Average Crude Oil Production and Imports



By Telegraph—Daily average gross output, by fields in U. S., for week ending with dates below as compiled by A.P.I.

	March 29	March. 22
Production east of Rockies	1,883,200	1,886,500
Decrease		3,300
Total production in U. S.	2,514,200	2,535,900
Decrease		21,700
Crude oil imports	270,140	176,570
Increase		93,570
Total crude supply	2,784,340	2,712,470
Increase		71,870

OKLAHOMA	Mar. 29	Mar. 22
Allen Dome	20,150	20,150
Asher	2,250	2,400
Blackwell	3,350	3,350
Bowlegs	19,800	22,050
Braman	3,500	3,550
Bristow-Slick	16,250	16,250
Burbank	16,300	16,500
Carr City	9,350	9,650
Cromwell	7,400	7,400
Cushing	14,350	14,350
Davenport	1,150	1,150
Duncan District	7,300	7,400
Earlsboro	35,100	37,500
East Earlsboro	35,300	41,050
Fox	1,200	1,250
Garber	4,600	4,500
Graham	3,500	3,500
Healdton	12,000	12,000
Hewitt	7,200	7,250
Hubbard	1,600	1,600
Konawa	8,000	8,850
Little River	42,000	42,300
Little River, East	13,750	17,850
Logan County	8,450	9,000
Maud	7,000	6,150
Mission	12,550	14,250
North Okmulgee	10,900	11,250
Oklahoma City	73,900	64,050
Osage (Outside Burbank)	26,600	26,350
Papoose	2,800	2,800
Pearson	600	650
Sasakwa	11,500	10,200
St. Louis	39,300	40,400
Scholem-Alechem	13,350	13,400
Searight	10,600	8,350
Seminole	19,950	20,550
Seminole, East	3,700	3,100
South Okmulgee	6,350	6,250
Thomas	650	650
Tonkawa	7,800	7,950
Wewoka	3,950	3,950
Yale-Jennings	9,800	9,650
Others	59,850	55,400
Total, Oklahoma	615,000	616,200
Decrease		1,200

KANSAS		
Augusta-Fox Bush	2,900	2,900
Churchill	4,400	4,200
El Dorado-Towanda	13,450	13,500
Florence-Covert	800	800
Greenwood County	19,000	19,000
Oxford	2,800	2,800
Peabody-Elbing	3,350	3,350
Rainbow Bend	1,050	1,100
Russell	3,450	3,450
Sedgwick County	21,050	21,800
Voshell	9,250	10,250
Others	33,000	34,000
Total, Kansas	114,500	117,150
Decrease		2,650

NORTH LOUISIANA		
Bellevue	650	650
Caddo, light	10,100	9,850
Caddo, heavy	2,700	2,700
Cotton Valley	2,300	2,350
De Sota and Red River	3,100	3,050
Elm Grove	450	450
Haynesville	4,600	4,600
Homer	3,600	3,600
Pleasant Hill	750	750
Urania	5,350	5,400
Zwolle	3,850	2,550
Others	5,850	2,700
Total, N. Louisiana	43,300	38,650
Increase		4,650

ARKANSAS		
Champagnolle	4,900	4,950
El Dorado	4,000	4,000
Lisbon	1,050	1,050
Nevada	1,100	1,050
Smackover, light	5,300	5,350
Smackover, heavy	41,100	41,150
Stephens	950	900
Others	200	250
Total, Arkansas	58,600	58,700
Decrease		100

TEXAS (Outside Gulf Coast)		
Panhandle District	**Mar. 29**	**Mar. 22**
Carson County	9,850	9,300
Gray County	56,400	59,600
Hutchinson County	22,600	23,500
Wheeler County	450	550
Others	600	600
Total, Panhandle Texas	89,900	93,550
Decrease		3,650
North Texas		
Archer County	17,600	17,650
Burkburnett	8,100	8,100
Electra	11,300	11,400
Iowa Park and K. M. A.	5,100	5,150
Montague-Cooke	10,500	10,500
Wilbarger	25,850	25,950
Others	2,000	2,050
Total, North Texas	80,450	80,800
Decrease		350
West Central Texas	**Mar. 29**	**Mar. 22**
Brown County	7,750	7,800
Callahan County	3,700	3,700
Coleman County	4,800	4,800
Eastland-Desdemona	5,500	5,550
Jack County	4,100	4,100
Palo Pinto County	750	700
Shackleford County	6,600	6,600
Stephens County	5,850	5,850
Throckmorton County	900	850
Young County	9,800	9,900
Others	1,400	1,450
Total, West Central Texas	51,150	51,300
Decrease		150
West Texas		
Crane and Upton Counties	46,400	45,200
Crockett County	2,200	2,000
Ector County	4,000	5,000
Howard County	39,700	38,500
Jones County	2,100	2,100
Mitchell and Scurry Counties	2,300	2,100
Reagan County	16,700	16,700
Winkler County	86,250	88,000
Yates	113,900	126,000
Balance Pecos County	5,600	5,700
Others	2,850	2,700
Total, West Texas	322,000	334,000
Decrease		12,000
East Central Texas	**Mar. 29**	**Mar. 22**
Boggy Creek	3,450	3,500
Corsicana-Powell	6,000	6,000
Currie	300	300
Mexia	4,100	4,150
Nigger Creek	200	200
Richland	250	250
Van Zandt	10,200	9,900
Wortham	900	900
Total, East Central Texas	25,400	25,200
Increase		200
Southwest Texas		
Dale	300	300
Darst Creek	15,500	15,500
Laredo District	8,600	8,700
Luling	10,000	10,100
Lytton Springs	900	900
Salt Flat	22,150	22,500
Somerset	1,350	1,300
Others	2,200	2,300
Total, Southwest Texas	61,000	61,600
Decrease		600
Total, Texas (Outside Gulf Coast)	629,900	646,450
Decrease		16,500

GULF COAST		
Coastal Texas	**Mar. 29**	**Mar. 22**
Barbers Hills	27,800	27,800
Batson	1,200	1,200
Big Creek	2,700	2,900
Blue Ridge	1,800	1,900
Boling	1,000	1,000
Damon Mound	500	500
Fannett	1,300	1,450
Goose Creek	5,000	4,900
Hull	9,100	8,700
Humble	19,100	19,200
North Dayton	800	1,000
Orange County	2,500	2,350
Pierce Junction	11,000	10,300
Port Neches	2,300	2,200
Raccoon Bend	10,250	10,200
Refugio County	43,950	39,200
Saratoga	1,050	1,050
Somerville	1,650	1,550
Sour Lake	2,250	2,250
South Liberty	5,200	5,100
Spindletop	16,350	15,500
Sugarland	10,150	10,600
West Columbia	6,050	6,000
Others	10,650	7,100
Total, Coastal Texas	193,650	183,950
Increase		9,700
Coastal Louisiana	**Mar. 29**	**Mar. 22**
East Hackberry	1,200	1,200
Old Hackberry	1,200	1,200
Edgerly	550	500
Evangeline	1,100	1,100
Lockport	2,800	2,800
Port Barre	1,400	1,750
Sorrento Dome	100	100
Sulphur Dome	3,350	3,500
Vinton	4,050	4,000
Others	4,750	2,950
Total, Coastal Louisiana	20,500	19,100
Increase		1,400
Total, Gulf Coast	214,150	203,050
Increase		11,100

ROCKY MOUNTAIN		
Wyoming	**Mar. 29**	**Mar. 22**
Big Muddy	2,050	2,100
Elk Basin	800	700
Grass Creek	2,000	2,050
Labarge	1,900	2,250
Lance Creek	150	200
Lost Soldier	2,950	3,300
Oregon Basin	4,800	4,850
Rock River	2,200	2,300
Salt Creek	30,300	29,650
Others	3,700	2,950
Total, Wyoming	50,850	50,350
Increase		500
Montana		
Cat Creek	1,200	1,200
Pondera	2,050	2,050
Sunburst	6,000	4,950
Others	50	50
Total, Montana	9,300	8,250
Increase		1,050
Colorado		
Florence	650	600
Fort Collins	1,400	1,450
Moffat (Craig)	1,100	1,000
Others	1,600	1,350
Total, Colorado	4,750	4,400
Increase		350
New Mexico		
Artesia	800	800
Balance Lea and Eddy Counties	7,900	8,000
Hogback	450	450
Rattlesnake	800	1,100
Table Mesa	100	100
Others	950	950
Total, New Mexico	11,000	11,400
Decrease		400
Total, Rocky Mountain	75,900	74,400
Increase		1,500
California	**Mar. 29**	**Mar. 22**
Dominguez	8,500	8,500
Elwood-Goleta	39,400	39,200
Huntington Beach	30,000	29,500
Inglewood	17,700	17,700
Kettleman Hills	12,500	12,700
Long Beach	102,500	104,000
Midway-Sunset	74,500	72,500
Santa Fe Springs	135,000	152,400
Seal Beach	24,000	24,500
Ventura Avenue	44,000	45,400
Others	143,000	143,000
Total, California	631,100	649,400
Decrease		18,300
Eastern		
(Not including Michigan)	120,000	120,250
Decrease		250
Michigan		
Mt. Pleasant	6,400	6,350
Muskegon	5,100	5,100
Saginaw	250	200
Total, Michigan	11,750	11,650
Increase		100

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refinery Operations Week Ended March 28 (By Telegraph)

	Kansas	Oklahoma	North & Cent. Texas	West Texas	North La.-Ark.	Total Week Ended Mar. 28
Plants Reporting	12	29	25	15	12	93
Da. Av. Cap. (Bbls.)	94,500	161,700	106,100	82,000	77,000	521,300
Da. Cracking Capacity	30,700	52,600	17,200	5,000	22,700	128,200
Da. Av. Crude Runs	72,966 + 4.7	116,267 + 6.0	65,844 — 1.3	44,091 — 0.1	58,092 — 6.1	357,260 + 1.5
Da. Av. Other Oils	9,447 + 33.6	6,716 — 7.9	4,311 — 64.4	1,416 — 30.3	2,817 + 4.6	24,707 — 20.8
GASOLINE—Gallons						
Stocks, Mar. 21	27,746,000	72,453,000	22,970,000	10,955,000	13,769,000	147,893,000
Prod. 3-21 to 3-28	12,939,000 + 7.0	17,787,000 + 0.5	8,259,000 + 1.0	3,810,000 — 1.9	5,583,000 — 0.9	48,378,000 + 1.9
Ship. 3-21 to 3-28	12,700,000 + 4.0	19,189,000 + 5.4	8,679,000 — 23.1	4,384,000 + 16.9	5,536,000 + 10.0	50,488,000 — 0.1
Stocks, Mar. 28	27,985,000 + 0.9	71,051,000 — 1.9	22,550,000 — 1.8	10,381,000 — 5.2	13,816,000 + 0.3	145,783,000 — 1.4
Ratio Sales to Prod.	98.2%	109.9%	105.1%	115.1%	99.2%	104.4%
KEROSENE—Gallons						
Stocks, Mar. 21	8,091,000	6,186,000	2,234,000	32,000	2,720,000	19,263,000
Prod. 3-21 to 3-28	2,508,000 + 21.1	2,304,000 — 9.1	1,587,000 — 3.4	.....	417,000 + 5.3	6,816,000 + 2.3
Ship. 3-21 to 3-28	2,764,000 + 5.7	2,025,000 — 27.9	1,366,000 — 29.5	11,000 + 22.2	407,000 — 38.1	6,573,000 — 18.1
Stocks, Mar. 28	7,835,000 — 3.2	6,465,000 + 4.5	2,455,000 + 9.9	21,000 — 34.4	2,730,000 + 0.4	19,506,000 + 1.3
Ratio Sales to Prod.	110.2%	87.9%	86.1%	.....	97.6%	96.4%
STOVE DISTILLATE—Gallons						
Stocks, Mar. 21	2,786,000	3,379,000	556,000	217,000	79,000	7,017,000
Prod. 3-21 to 3-28	466,000 + 6.2	672,000 + 39.1	146,000	112,000 + 1.8	213,000 + 25.3	1,609,000 + 19.4
Ship. 3-21 to 3-28	528,000 + 59.0	658,000 — 25.6	323,000 + 19.6	146,000 + 9.8	159,000 — 6.5	1,814,000 + 1.4
Stocks, Mar. 28	2,724,000 — 2.2	3,393,000 + 0.4	379,000 — 31.8	183,000 — 15.7	133,000 + 68.4	6,812,000 — 2.9
Ratio Sales to Prod.	113.3%	97.9%	221.2%	130.4%	74.6%	112.7%
GAS OIL—Gallons						
Stocks, Mar. 21	5,007,000	39,805,000	2,876,000	4,906,000	7,650,000	60,244,000
Prod. 3-21 to 3-28	1,698,000 + 17.5	2,196,000 + 16.4	1,429,000 — 44.1	636,000 + 0.8	2,374,000 — 17.1	8,333,000 — 11.2
Ship. 3-21 to 3-28	920,000 — 5.2	997,000 + 4.2	1,610,000 + 21.9	674,000 + 1.8	2,123,000 + 14.0	6,324,000 + 9.6
Stocks, Mar. 28	5,785,000 + 15.5	41,004,000 + 3.0	2,695,000 — 6.3	4,868,000 — 0.8	7,901,000 + 3.3	62,253,000 + 3.3
Ratio Sales to Prod.	54.2%	45.4%	112.7%	106.0%	89.4%	75.9%
FUEL OIL—Gallons						
Stocks, Mar. 21	15,102,000	29,876,000	64,314,000	12,329,000	25,451,000	147,072,000
Prod. 3-21 to 3-28	5,848,000 + 4.8	7,479,000 + 10.5	8,005,000 — 10.5	6,637,000 — 1.2	5,154,000 — 12.9	33,123,000 — 2.4
Ship. 3-21 to 3-28	6,258,000 + 43.3	6,051,000 — 6.4	6,516,000 — 38.4	6,067,000 — 18.8	5,673,000 + 1.2	30,565,000 —11.4
Stocks, Mar. 28	14,692,000 — 2.7	31,304,000 + 4.8	65,803,000 + 2.3	12,899,000 + 4.6	24,932,000 — 2.0	149,630,000 + 1.7
Ratio Sales to Prod.	107.0%	80.9%	81.4%	91.4%	110.1%	92.3%

Gasoline Produced by Various Methods, Week Ended March 28

	Kansas	% of Total	Oklahoma	% of Total	North & Cent. Texas	% of Total	West Texas	% of Total	Louisiana-Arkansas	% of Total	Total	% of Total
Straight Run	7,637,000	59.0	11,303,000	63.5	6,562,000	79.5	3,493,000	91.7	2,112,000	37.8	31,107,000	64.3
Cracked	4,036,000	31.2	4,992,000	28.1	1,444,000	17.5	112,000	2.9	2,820,000	50.5	13,404,000	27.7
Natural	1,266,000	9.8	1,492,000	8.4	253,000	3.0	205,000	5.4	651,000	11.7	3,867,000	8.0
Total	12,939,000		17,787,000		8,259,000		3,810,000		5,583,000		48,378,000	

+ or — columns are % change over previous week.

Gasoline Stocks Continue Falling in Mid-Continent

Staff Special—By Telegraph
TULSA, March 31

STOCKS of gasoline were reduced 1,100,000 gallons in the week ended March 28 at 93 Mid-Continent refineries reporting operations to this publication. Each district except Kansas and Louisiana-Arkansas drew on stocks to meet current demand. Kansas refiners added 200,000 gallons to storage and the Louisiana-Arkansas refiners came within 40,000 gallons of shipping their week's output.

Kansas and Oklahoma refiners increased their crude runs with the result that runs for the entire district were up 5200 barrels daily average.

Gasoline output of all plants increased approximately 1,000,000 gallons and shipments continued at the high level of the previous week.

Kerosene stocks increased 240,000 gallons halting the draft on reserves

Summary for the Month

Production and shipments, all reporting refineries, for four weeks ended March 28. Change in stocks figures from Feb. 28.

GASOLINE	Gallons
Production	182,613,000
Shipments	195,441,000
Net change in stocks	—12,828,000
Ration sales to production	107.0%
KEROSENE	
Production	25,860,000
Shipments	195,441,000
Net change in stocks	—2,439,000
Ratio sales to production	109.4%
STOVE DISTILLATE	
Production	5,944,000
Shipments	6,915,000
Net change in stocks	—971,000
Ratio sales to production	116.3%
GAS OIL	
Production	32,182,000
Shipments	25,070,000
Net change in stocks	+7,112,000
Ratio sales to production	77.9%
FUEL OIL	
Production	127,957,000
Shipments	125,766,000
Net change in stocks	+2,191,000
Ratio sales to production	98.3%

which has been continuous since early in January. Stove distillate stocks were cut 200,000 gallons.

Gas and fuel oil stocks both increased. Gas oil storage was up 2,000,000 gallons and fuel oil 2,600,000 gallons.

Three New House Organs Bow to Oil Industry

CLEVELAND, March 28.—More new house organs have come to the editor's desk lately. Three came in one week, one being the "Shell Safety News," another "The Texaco Mission," and the third "The Fuel Oil News" published by Griffith-Consumers Co., distributors of fuel oil and coal in Washington, D. C.

The February issue of the Fuel Oil News was the first of that publication. It is put out as a messenger of good will to fuel oil users in Washington and vicinity, to real estate firms, builders, architects and heating engineers. It contains readable news material on fuel oil for home heating. The cover of the February issue has a picture of the White House and an article tells of the various means of heating the president's home, including its present use of oil heat.

It is edited by D. R. Beane and F. P. Jenkins, manager and assistant manager respectively of the fuel oil department of the company.

March brought out the third edition of volume one of the Shell Safety News published monthly by the Shell Petroleum Corp., St. Louis.

It is, as its name suggests, devoted entirely to safety news and tells of safety precautions all the way from crossing streets up to safety in the oil field and in natural gasoline plants. It endeavors to keep before company employes the necessity of using extreme care when working around any petroleum product and devotes several pages to pointing out how accidents and fatalities have happened in each division of the company.

The first page of the publication points out how the company and employes lost money on accidents in 1929. On the next page are health suggestions telling how to take care of common colds, then follow pages of first aid news, description of accidents that have taken place in the geological and land departments, in the production division, in the pipe line department, in the refinery, distributing division, gasoline plants, and in the automotive department.

"The Texaco Mission" is published monthly by the Texas Co. at New York for its dealers and is devoted to marketing news. Several Texaco dealers who have made an outstanding success with some feature of their business, are interviewed and a short news item published about how they did it.

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SINCLAIR REFINING COMPANY, INC., 45 Nassau St., New York – *Atlanta, Chicago, Houston, Kansas City*

Refinery - Tank Wagon Markets

National Petroleum News

Gasoline Demand on Larger Scale; Midwest Prices Continue Upward

ACTIVE domestic and export buying of gasoline in the Mid-Continent, together with further improvement in prices in this area, stood out rather prominently in refined oil tank car markets during the last week of March.

Gasoline prices in the Chicago district and western Pennsylvania moved higher in sympathy with the Mid-Continent but the upward swing which got under way earlier in the month on both the Atlantic and Pacific seaboards was hampered materially by retail price wars.

For the first time since the new year turned the corner, middle western jobbers generally displayed an active interest in buying gasoline for future delivery. True, a few large distributing companies earlier in the year who felt that U. S. Motor at 5.50 cents Group 3 was pretty much of a bargain, bought large quantities of gasoline for storage, but not until the past week did the smaller jobber become active in the future market.

U. S. Motor gasoline in Oklahoma advanced 0.125-cent to 6.375 cents on the low end of the market; a few large refiners raised their prices to 6.625 cents. Motor gasoline in the Chicago market continued its weekly advance of 0.125-cent a gallon, marking the fourth consecutive week that the price range has narrowed in this amount.

Posted quotations at all points along the Atlantic seaboard were unchanged but considerable price shading was said to be going on. At New York harbor, the majority of companies quoted 8.50 cents for U. S. Motor but reported receiving very little business at this figure. Other companies were offering tank car lots rather freely at 7.75 cents and barge deliveries were being made at still lower prices.

Buyers for members of the Export Petroleum Association placed orders for between 12 and 13 million gallons of gasoline in the Mid-Continent to be shipped in April. Prices were said to be the same as those at which the buyers secured their March requirements. Independent exporters continued to take foreign business at less than the Association's posted prices but their volume was small compared with that done by members of the Association.

Fuel oil prices declined further in the middle west but advanced on the Pacific coast where curtailment of crude production made more progress.

Prices for other refined oils were generally unchanged in all markets. Wax buying was reported on a slightly large scale but sellers generally were reluctant to dispose of any sizable portion of their stocks at the low prices bid by foreign buyers. Most of the current movement has been through domestic channels.

Chicago Gasoline Up Despite Bad Weather

Staff Special
CHICAGO, March 29

DESPITE the drawback of cold, snowy weather over most of the middle west, which curtailed gasoline consumption rather heavily, the Chicago gasoline market continued to show improvement and prices were at least 0.125-cent higher as the week ended March 29.

This makes the fourth consecutive week that the low of the price range on U. S. Motor gasoline, as shown in the Chicago Resale market of PLATTS OILGRAM, has shown an increase of at least 0.125-cent. The price range on March 1 was 5.75 to 6.50 cents and the general range for sales on March 29 was 6.25 to 6.50 cents. A few sales were reported at 6.125 cents and also at 6.625 cents.

The market was in an unsettled condition March 29, with practically all of the U. S. Motor available for March shipment already off the market and most sellers still uncertain what price to quote for delivery in April.

During the first half of the past week, carlot marketers offered U. S. Motor at 6.125 cents for shipment during the remainder of March. By March 29, only scattered cars were available for prompt shipment at less than 6.25 cents and a number of marketers were asking 6.375 cents. Sellers reported that the bulk of the 6.125 cent gasoline offered was for shipment from Kansas and North Texas, with a small quantity available from Illinois and Oklahoma refineries. Sales of U. S. Motor at 6.50 cents were reported by several refiners on March 29. This represented the top of the going market, Although a number of refiners advanced their quotations to 6.625 cents and one of them reported a few sales at this figure.

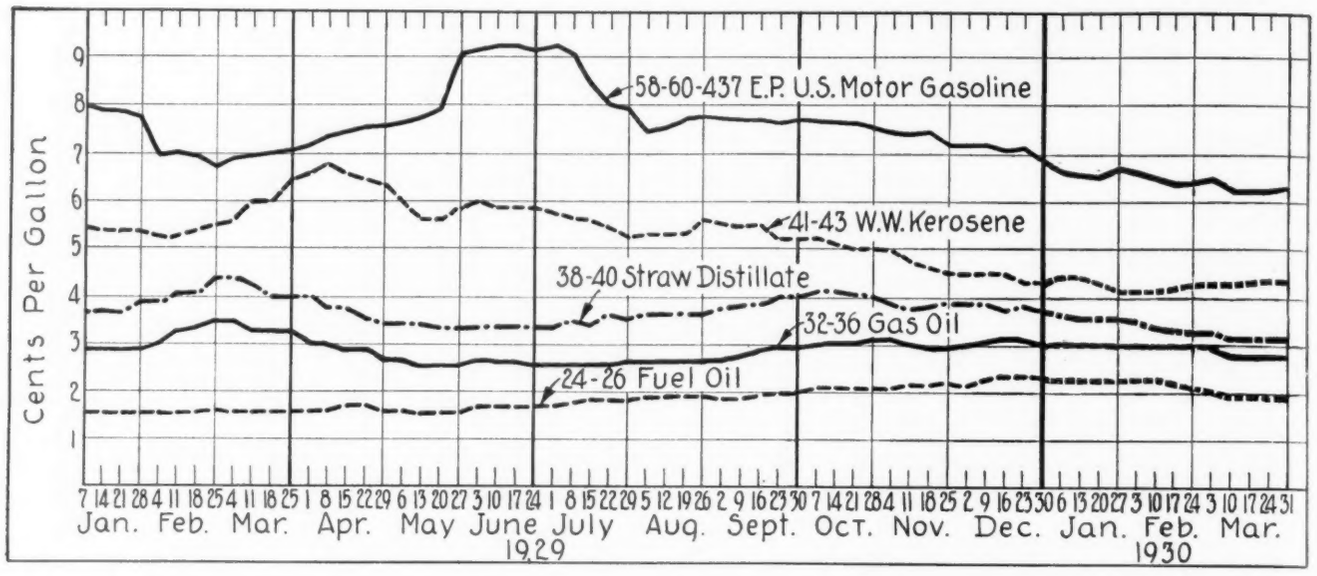
A wide variety of opinions was heard regarding prices of U. S. Motor for April delivery. Carlot marketers generally reported their buying prices were at least 6.375 cents on March 29. Several said they had previously purchased some Motor for shipment over this period at prices ranging from 6 to 6.25 cents. The consensus among the Chicago trade was that there had been no great quantity of gasoline purchased for April delivery as yet, and many of them refused to quote a price for shipment over this period.

Three of four marketers reported they had some U. S. Motor which they would sell at 6.25 cents for shipment during the first week in April. The bulk of this gasoline would be shipped from Kansas and Illinois refineries, with some from North Texas and Oklahoma.

High gravity gasolines, while showing slight price advances, were not receiving much attention from the trade and prices did not advance proportionately with U. S. Motor.

Divergent reports also were heard

Current Prices of Principal Mid-Continent Refined Products


58-60-437 E.P. U.S. Motor Gasoline
41-43 W.W. Kerosene
38-40 Straw Distillate
32-36 Gas Oil
24-26 Fuel Oil
Cents Per Gallon
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1929
1930

Prices shown are in Group 3 basis and extended to date shown in Refinery Market Tables Section of this issue.

regarding demand and prices for kerosene. Several sellers said they had enjoyed a fine demand during the entire month of March, although it was not quite as good the last week, and most of them advanced their prices on 41-43 w.w. kerosene to 4.50 cents. Other sellers said their business had been light and they were still offering this grade at 4.25 cents. Marketers reported they could buy 41-43 at 4.125 cents in several districts.

The blizzard which swept the middle west last week proved to be a blessing to the furnace oil distributors. Most of them reported a good demand for these oils and were able to draw on their storage for sizeable amounts and in some cases were buying in the tank car market. One drawback reported, however, was that the snow, especially in the Chicago district, where an all time record was set, was so heavy that deliveries were seriously hampered.

Little change was noted in distillate and gas oil prices, while some grades of fuel oils continued to move lower. Several sellers offered 18-22 zero, high sulfur fuel at $0.65 and one distributor said he purchased one car at $0.625. Sales were also reported up to $0.70.

The weather probably will be fair over the Standard of Indiana territory the first part of next week, says the Chicago weather bureau, with precipitation likely the latter part. Temperatures will likely fall below normal late in the week.

Correction

These prices should apply in the Complete Seaboard Market table on page 122 of this issue, as of March 31, instead of those published:

Eastern Domestic Market: U. S. Motor gasoline in Philadelphia district, 8.25 to 8.50 cents;

Gulf Export Market: 64-66 375 e.p. gasoline, in cases, $2.00; Water white kerosene, in cases, $1.75; Prime white, in cases, $1.65.

Shut Down Refinery For Repairs

TULSA, March 29.—The Crystal Oil Refining Corp. will shut down its refinery at Cedar Grove about April 1 for repairs and alterations, according to newspaper accounts. No announcement was made as to the duration of the shut down, but it was stated the corporation had made arrangements to take care of all its customers and contracts, pending resumption of refining operations.

Gasoline Plant for New Mexico

HOUSTON, March 29.—Texas Pacific Coal & Oil Co., it is announced from Fort Worth, will build the first natural gas gasoline plant in southeastern New Mexico. It is to be constructed on its state land lease in southeastern Lea county and will have initial capacity of 2000 gallons daily.

Shipments From Southern California

LOS ANGELES, Mar. 26.—Shipments of bulk petroleum from Southern California ports for week ended Mar. 22 were as follows:

Destination	Crude	Gasoline	Diesel	Kerosene	Fuel	Gas-Oil	Total
Pacific for.	137,135	.....	833	.....	186,311	74,697	398,976
Atlantic dom.	.....	.....	.....	.....	.....	153,067	153,067
Atlantic for.	.....	326,381	.....	.....	.....	.....	326,381
Total	137,135	326,381	833	.....	186,311	227,764	878,424

Prices 10 Years Ago
March 29, 1920

	Oklahoma	Penna.
58-60 U. S. Motor.....	23.00c	23.75–24.00c
80-84 Natural	17.25–17.50c	.....
Kerosene (41-43 Okla.; 47 w. w. Pa.).....	11.50–12.50c	15.50–16.00c
Fuel Oil (24-26 Okla.; 38-40 Pa.)	$2.90–$3.25	12.50–13.50c
Crude (Okla. 35-35.9)....	$3.50	$6.10
Chicago tank wagon		25.00c

Prices A Year Ago
April 1, 1929

	Oklahoma	Penna.
58-60 U. S. Motor.....	7.1911c	8.875–9.25c
Grade A Natural	7.75–8.00c	.....
Kerosene (Okla. 41-43; Pa., 47 w. w.).....	6.75c	8.00–8.75c
Fuel Oil (Okla. 24-26; Pa. 36-40)	$0.675	5.00–5.50c
Crude (Okla. 35-35.9)....	$1.17	$4.00
Chicago tank wagon		14.00c

Mid-Continent Refinery Markets

U. S. Motor Advances 0.125 to 0.25-Cent

Staff Special
TULSA, March 29

PRICE advances of 0.125 to 0.25-cent for U. S. Motor gasoline, and the placing of orders by the Export Petroleum Association for 12 to 13 million gallons of gasoline for April delivery furnished the high lights in the Mid-Continent refinery market the last week of March.

Buyers for the export association early in the week made tentative inquiries in the field to ascertain the potential amount available, and on March 27 and 28 made their allotments with the refiners from whom they have been buying the past several months.

The prices paid for the gasolines were not revealed, but were understood to be based on the posted prices for the various grades at the Gulf. The price paid for the March allotment of 64-66, 375 e.p. gasoline ranged from 7.25 to 7.75 cents, due to the fact that the posted price was reduced. Since there has been no further change it is assumed generally by the trade that the price for the 375 e.p. grade for April delivery was 7.25 cents.

The unexpected blizzard which swept over the northern and central states early in the week slowed up gasoline demand somewhat, several sellers reported, but the adverse weather was taken generally as being of too short duration to have any drastic effect on the gasoline market.

A majority of refiners reported they had been able to keep orders in line with production throughout the week. A few refiners having their own retail distribution apparently were not overly anxious to accept spot business, and a few of the smaller refiners reported instructions had been really brisker than they had even hoped for at this time.

Buying generally slowed up somewhat late in the week, a normal condition near the end of the month. Inquiries continued to come in, however, for April delivery but refiners for the most part were reluctant to quote on that basis. Quotations for U. S. Motor for April delivery, whenever obtainable, were around 6.50 cents a gallon.

Natural gasolines were steady in prices. Demand was brisk the first part of the week but slowed up toward the latter half due to the nearness of the first of the month. Two large manufacturers were in the market at times during the week. One company bought grade AA, paying 5.625 cents a gallon, and the other bought grade BB at 4.75 to 4.875 cents.

Both buyers apparently were well committed for March and desired to complete the orders by buying from other manufacturers rather than drawing from their own stocks just at this season.

Inquiries were in the market for April delivery but as far as could be learned few quotations had been made except on a market date of shipment basis.

Kerosene demand in Kansas, Oklahoma and north Texas was comparatively large in volume. Prices in the three districts were steady throughout the week.

Reports from Louisiana late in the week indicated refiners in that district were slowly relieving themselves of the excess kerosene which had accumulated during the winter. That district was recognized generally as the only doubtful spot in the Mid-Continent as far as kerosenes were concerned and refiners in other districts feared stiff competition would develop, but a combination of larger domestic demand in that differential territory and a little export buying gave the refiners at least temporary relief.

Gas oils and stove distillates had a slight flurry for a day or two because of the blizzard but by the end of the week they were again in the background of the market picture.

Fuel oils also were comparatively quiet although inquiries were reported comparatively good in volume for April shipments. Prices quoted apparently were in line with spot market prices.

Neutral oils moved up slightly in price late in the week due to the increased demand and the scarcity of virtually all grades. Considerable inter-refinery buying has been done recently. One manufacturer said he believed one reason for the increased demand was due to the fact that compounders were using less naphthene base neutrals at present and more of the paraffin base oils.

Bright stock prices broke from the flat 37 cent price, the range being 36 to 37 cents. The lower quotation, however, was understood to be for oils of a comparatively high cold test.

Conflicting opinions were heard relative to demands for bright stock. Several manufacturers said their orders had been good during March, while others said they had done very little spot business. The slight reduction in price was attributed in part to the lower prices prevailing for Pennsylvania oils.

Wax was extremely quiet, a majority of refiners reported. Quotations generally were 2.50 cents for 124-126 white crude scale.

Heavy Gulf Lubes Moving Well

HOUSTON, March 31.—Gulf Coastal lubricants of the heavier viscosities are moving in greater quantities than those of lighter classification. A continued firm price structure is reported, however, on all viscosities. Contract quantities are moving out better than recently and spot business is reported satisfactory. Price schedules are unchanged.

Shaffer Refining Becomes Deep Rock Oil Corp.

CHICAGO, March 28.—On April 1 the Shaffer Oil & Refining Co., manufacturer of Deep Rock oil products, became the Deep Rock Oil Corp., according to John L. Gray, vice president and general manager. This company, which is a subsidiary of the Standard Gas & Electric Co., has its headquarters at Tulsa, general sales offices at Chicago, and district offices in Des Moines, Milwaukee, Minneapolis, New York, Oklahoma City and Omaha.

The Deep Rock company is a complete unit. It produces, refines, transports and markets its products in 11 middlewestern states. It has a refinery at Cushing, Okla.

Marketing and distributing units of the company had been operated as the Home Oil Co., operating in Minnesota, North and South Dakota, as the High Test Oil Corp., in Oklahoma and Arkansas, and the Deep Rock Oil Co. in Wisconsin and Michigan.

With the change in the name of the Shaffer company, the corporate status and names of these companies also will be changed.

All directors of the Shaffer company were reelected at a stockholders' meeting March 20.

In addition to a regular line of gasoline and lubricating oils, the company makes such specialty products as naphtha, solvents, napoleum spirits, kerosene, mineral seal oil, fuel oils and special fuels and lubricants for aviation. It recently added Ethyl fluid to its high compression aviation gasoline.

The Shaffer company has been operating a five-passenger Fokker cabin type airplane with which it has conducted many tests of gasolines and motor oils for aviation use under varying climatic conditions.

Comparative Prices of 58-60 U. S. Motor Gasoline, 437 E. P., Group 3 and Point of Origin, to Jobbers Only

In Effect March 31

	Price F.O.B. Group 3		*Price F.O.B. Point of Origin*		*If for Particular Destination*
Oklahoma	6.5312	(Wt. Avg.)	6.5312	(Wt. Avg.)	.....
Kansas	6.625	.....	.....	.....	S. O. Neb. & Indiana Territory, etc.
Kansas	.....	.....	6.8750	(Wt. Avg.)	Kansas only.
North Texas	6.25–6.375	.....	6.125–6.375	.....	.....
West Texas	6.25–6.375	.....	6.25	.....	.....
Louisiana-Arkansas	6.25–6.50	.....	.....	.....	Michigan, Ohio and Indiana.
Louisiana-Arkansas	.....	.....	7.00	.....	State or differential haul.
Indiana-Illinois	6.25–6.625	.....	.....*	.....	S. O. Indiana territory except Detroit and vicinity. For Ohio on delivered basis only.

*Shipments made from E. Chicago, Ind., and Wood River, Ill., according to conditions and freight rates; no prices F.O.B. point of origin can be given.

Chicago Resale Market

CHICAGO, March 31

GASOLINE prices continued to advance in the Chicago market last week. Up to March 28 Chicago marketers offered U. S. Motor at 6.125 cents for shipment before April 1. Material at this price was practically eliminated from the market by March 29. Most sellers still refused to quote Motor over April. Three or four marketers offered some material, for shipment the first week in April, on the basis of 6.25 cents Group 3. Most of it was for shipment from Illinois and Kansas refineries, although some originated in North Texas and Oklahoma.

Following prices represent sales made on Group 3 freight basis although shipments may originate in other refining districts such as North Texas, West Texas, Arkansas, Louisiana, Illinois, Indiana, Kentucky, etc.

	Prices Mar. 31	**Prices Mar. 24**	**Prices Mar. 17**
58-60 U. S. Motor, 437 e.p.	6.25 – 6.50	6.125– 6.50	6.00 – 6.50
60-62 437 e.p. gasoline	6.375– 6.50	6.25 – 6.50	6.00 – 6.50
60-62 400 e.p. gasoline	6.625– 6.75	6.50 – 6.625	6.375– 6.625
64-66 375 e.p. gasoline	7.125– 7.375	7.00 – 7.25	7.00 – 7.25
68-70 350-360 e.p. gasoline	7.50 – 7.75	7.50 – 7.75	7.50 – 7.75
41-43 w.w. kerosene	4.25 – 4.50	4.25 – 4.375	4.25 – 4.375
42-44 w.w. kerosene	4.50 – 4.75	4.50 – 4.75	4.375– 4.625
38-40 straw distillate	3.00 – 3.125	3.00 – 3.125	3.00 – 3.25
32-36 ordinary dark gas oil	2.50 – 2.625	2.375– 2.625	2.50 – 2.625
32-36 dark zero gas oil	2.625– 2.75	2.625– 2.75	2.75 – 3.00
32-36 straw zero gas oil	2.75 – 2.875	2.75 – 2.875	2.875– 3.125
28-30 zero fuel oil (per bbl.)	$0.975–$1.00	$0.975–$1.025	$1.00 –$1.075
28-30 fuel oil (per bbl.)	$0.95 –$1.00	$0.95 –$1.00	$1.00 –$1.05
24-26 fuel oil (per bbl.)	$0.80 –$0.85	$0.80 –$0.875	$0.80 –$0.875
18-22 fuel oil, low sulfur (per bbl.)	$0.675–$0.725	$0.70 –$0.75	$0.70 –$0.775
8-22 fuel oil, high sulfur zero (per bbl.)	$0.65 –$0.70	$0.675–$0.725	$0.675–$0.75

Weighted Average Prices

OKLAHOMA

	Mar. 31		**Mar. 24**		**Mar. 17**	
	No. of cars	**Price**	**No. of cars**	**Price**	**No. of cars**	**Price**
58-60 U. S. Motor, 437 e.p.	4	6.5312	18	6.4166	16	6.2734
60-62 437 e.p. gasoline	5	6.5000	No sales reported		7	6.2500
60-62 400 e.p. gasoline	1	6.8750	4	6.7500	2	6.7500
64-66 375 e.p. gasoline	1	7.1250	No sales reported		No sales reported	
*58-60 437 e.p. gasoline	..	6.375–6.75	..	6.125–6.50	..	6.00–6.50

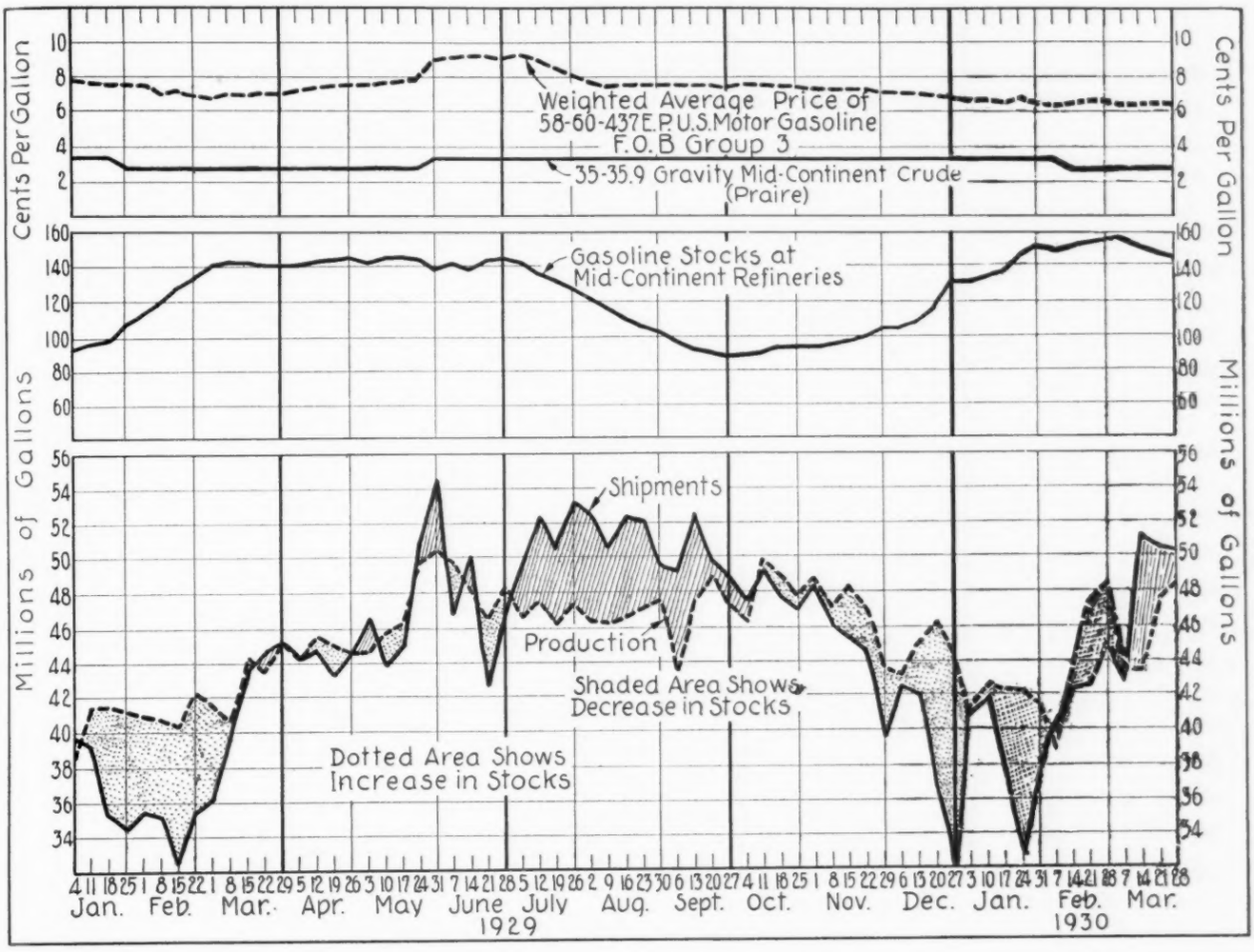
KANSAS

	Mar. 31		**Mar. 24**		**Mar. 17**	
	No. of cars	**Price**	**No. of cars**	**Price**	**No. of Cars**	**Price**
58-60 U. S. Motor, 437 e.p.	1	6.8750	No sales reported		3	6.5000

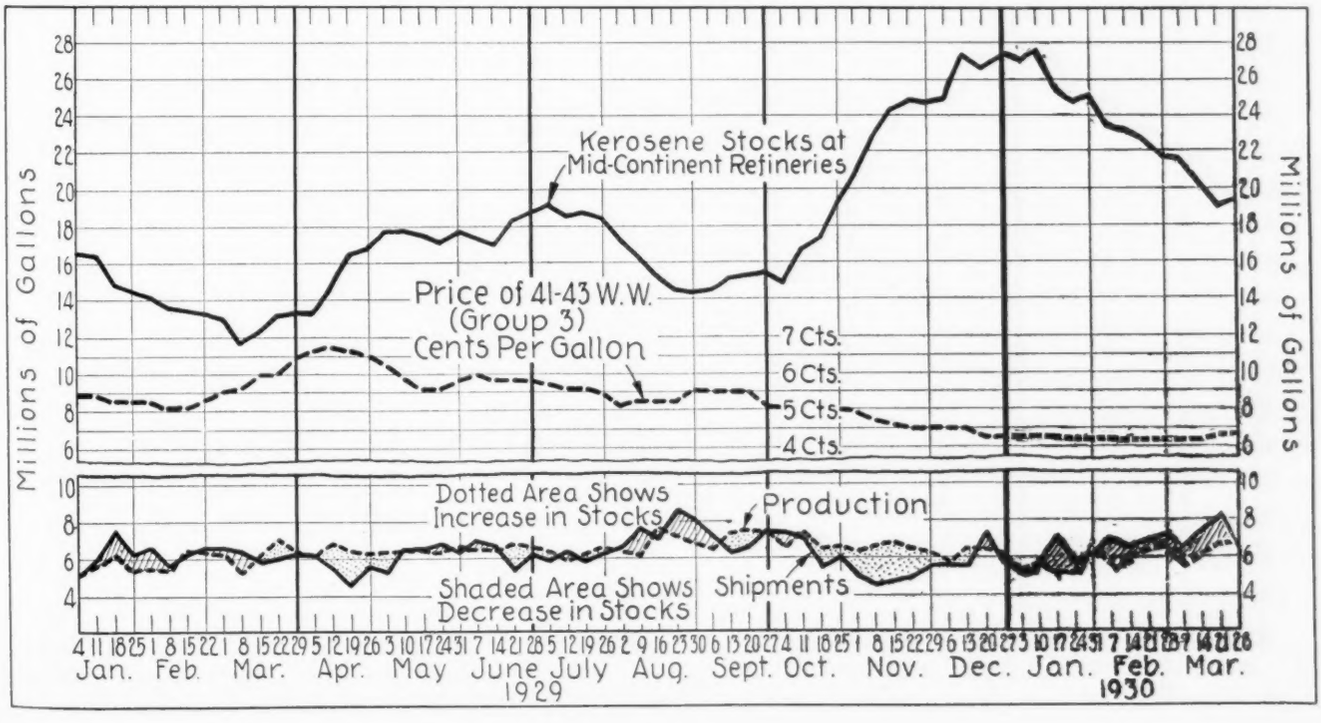
*Full U. S. Motor specifications not guaranteed. Prices represent both quotations and sales.

Barometer of Mid-Continent Refinery Market—Week Ending March 28

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Cents Per Gallon
Weighted Average Price of 58-60-437 E.P.U.S. Motor Gasoline F.O.B Group 3
35-35.9 Gravity Mid-Continent Crude (Praire)
Gasoline Stocks at Mid-Continent Refineries
Millions of Gallons
Shipments
Production
Shaded Area Shows Decrease in Stocks
Dotted Area Shows Increase in Stocks
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1929
1930

Prices shown above are extended to date shown in Refinery Market and Crude tables in Market section of this issue and stocks, shipments and Production are extended to date as shown in the table on page 106


Millions of Gallons
Kerosene Stocks at Mid-Continent Refineries
Price of 41-43 W.W. (Group 3) Cents Per Gallon
7 Cts.
6 Cts.
5 Cts.
4 Cts.
Dotted Area Shows Increase in Stocks
Production
Shaded Area Shows Decrease in Stocks
Shipments
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1929
1930

Refinery Markets on Light Oils and Lubricants

Prices given below are in cents per gallon, except where $ is shown

(These Refinery Prices compiled in the OIL PRICE HANDBOOK for a whole year)

GASOLINE AND NAPHTHA

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
48-50 450 e.p. naphtha	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
50-52 450 e.p. naphtha	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
56-58 450 e.p. gasoline	5.75 – 6.25	5.75 – 6.25	5.75 – 6.25
58-60 450 e.p. gasoline	5.75 – 6.25	5.75 – 6.25	5.75 – 6.25
64-66 390 e.p. gasoline	6.75 – 7.25	6.75 – 7.25	7.00 – 7.25
68-70 350-360 e.p. gasoline	7.50	7.375– 7.50	7.875– 8.25

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

52-54 Naphtha	7.25 – 7.50	7.25 – 7.50	7.00 – 7.50
54-56 Naphtha	7.25 – 7.50	7.25 – 7.50	7.25
58-60 U.S. Motor 437 e.p.	7.375– 7.75	7.25 – 7.75	7.50 – 7.75
60-62 400-410 e.p. gasoline	7.625– 8.125	7.625– 8.125	7.75 – 8.25
64-66 390 e.p. gasoline	7.75 – 8.50	7.875– 8.50	8.00 – 8.75
68-70 350-360 e.p.	8.50 – 9.00	8.50 – 9.00	8.75 – 9.50

OHIO (Quotations of S. O. Ohio. 4c state tax to be added.)

U. S. Motor Gasoline

Ohio, delivery at any point	9.50	9.50	9.50

KANSAS (F. o. b. refinery Kansas destination)

60-62 437 e.p. gasoline	7.00 – 7.25	6.75 – 7.25	6.75 – 7.25
60-62 400 e.p. gasoline	7.25	6.875– 7.25	6.75 – 7.50
64-66 375 e.p. gasoline	7.25 – 7.50	7.25 – 7.50	7.50 – 8.00

NORTH TEXAS (F. o. b. North Texas refineries)

56-58 450 e.p. gasoline	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
58-60 450 e.p. gasoline	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
58-60 U.S. Motor 437 e.p.	6.125– 6.375	6.125– 6.375	6.125– 6.25
60-62 400 e.p. gasoline	6.375– 6.50	6.375– 6.50	6.125– 6.25
64-66 390 e.p. gasoline	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00
64-66 375 e.p. gasoline	7.50	7.50	7.50
68-70 350-360 e.p. gasoline	7.75	7.75	7.75

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

50-52 naphtha	5.50	5.50	5.50
58-60 437 e.p. gasoline	5.75	5.75	5.75
58-60 U.S. Motor 437 e.p. gasoline	6.25	6.25	6.25

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

58-60 U S. Motor gasoline	7.00	6.75	6.50

ARKANSAS (Ark., N. La. and Miss. destination)

58-60 U.S. Motor 437 e.p.	7.00	6.75	6.50

CALIFORNIA (3c tax to be added to California gasoline prices if used n state.)

54-58 U.S. Motor 437 e.p.	8.50 – 9.50	8.50 – 9.50	8.00 – 9.50
54-58 U.S. Motor, for outside state shipment	7.50 – 8.50	6.50 – 7.25	6.50 – 7.25
58-61 375-400 e.p. gasoline	9.50 –11.00	9.50 –11.00	9.50 –10.50
42-45 Engine Distillate 445-480 e.p.	7.00 – 8.50	7.00 – 8.00	7.00 – 8.00

NATURAL GASOLINE

(Note: End point of all grades, not over 375 F. Corrosion test adopted Oct. 1, 1927; A.S.T.M. Method D130-27T; doctor test, July 2, 1928.)

OKLAHOMA (F. o. b. Oklahoma refineries)

Grade AA, 80-87.9, 90% Recovery	5.625– 5.75	5.625	5.50
Grade A, 72-79.9, 90% Recovery	5.75	5.75	5.50
Grade BB, 84-92, 85% Recovery	4.875– 5.00	4.75	4.50
Grade B, 76-83.9, 85% Recovery	5.00	5.00	4.50
Grade C, 80-92, 78% Recovery	4.75	4.75	4.50

NORTH TEXAS (F. o. b. Breckenridge)

Grade AA, 80-87.9, 90% Recovery	5.625– 5.75	5.625	5.50
Grade A, 72-79.9, 90% Recovery	5.75	5.75	5.50
Grade BB, 84-92, 85% Recovery	4.875– 5.00	4.75	4.50
Grade B, 76-83.9, 85% Recovery	5.00	5.00	4.50
Grade C, 80-92, 78% Recovery	4.75	4.75	4.50

NORTH LOUISIANA (F. o. b. Monroe District)

	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
Grade AA	†6.00	†6.00	†5.50
Grade BB	†5.25	†5.25	†4.50
Grade C	†5.00	†5.00	†4.375

CALIFORNIA (F. o. b. California refineries)

75-85, 375-390 e.p. blend	7.00 – 7.50	7.50 – 8.25	7.50 – 8.25

BURNING OILS

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

45 w.w. kerosene	5.75 – 6.125	5.75 – 6.125	5.875– 6.125
46 w.w. kerosene	6.00 – 6.50	6.00 – 6.50	6.25 – 6.50
47 w.w. kerosene	6.375– 6.75	6.25 – 6.75	6.50 – 6.875
300 mineral seal	6.75 – 7.00	6.75 – 7.00	6.75 – 7.00

OKLAHOMA (F. o. b. Oklahoma refineries)

41-43 w.w. kerosene	4.25 – 4.50	4.25 – 4.50	4.25 – 4.375
42-44 w.w. kerosene	4.75	4.75	4.50 – 4.75

KANSAS (F. o. b. refinery Kansas destination)

41-43 w.w. kerosene	4.75 – 4.875	4.75 – 4.875	4.75
42-44 w.w. kerosene	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25

NORTH TEXAS (F. o. b. North Texas refineries)

40-42 w.w. kerosene	4.125	4.00 – 4.125	4.00 – 4.125
41-43 w.w. kerosene	4.25 – 4.375	4.25	4.25

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

41-43 w.w. kerosene	4.75	4.50 – 4.75	4.50 – 4.75
42-44 w.w. kerosene	5.00	4.75 – 5.00	4.75 – 5.00

ARKANSAS (Ark., N. La. and Miss. destination)

42-44 w.w. kerosene	5.00	5.00	5.00

CALIFORNIA (F. o. b. California refineries)

38-40 w.w. kerosene	4.50 – 5.50	4.25 – 5.50	4.50 – 5.50

NEUTRAL OIL

PENNSYLVANIA (F. o. b. Western Pennsylvania refineries)

Vis.		(Viscosity at 70° F.)	
200 No. 3 Assoc. Filt.	25.00 –26.00	25.00 –26.00	25.00 –26.00
180 No. 3 Assoc. Filt.	21.00 –22.00	21.00 –22.00	21.00 –22.00
150 No. 3 Assoc. Filt.	15.50 –17.00	15.50 –17.00	16.00 –17.00
		(Non Viscous)	
34 Grav. 330-340 Flash	7.00 – 7.50	7.00 – 7.50	7.00 – 7.50

****OKLAHOMA** (F. o. b. Oklahoma refineries)

Vis.	Color	(Viscosity at 100° F.)		
100	No. 2	6.00 – 7.50	6.00 – 7.50	6.00 – 7.50
150	No. 3	8.00 – 9.00	7.75 – 8.50	7.75 – 8.50
150	No. 4	7.00 – 8.50	6.75 – 8.00	6.75 – 8.00
180	No. 3	9.00 –10.50	9.00 –10.00	9.00 –10.00
180	No. 4	9.00 –10.00	8.75 – 9.50	8.75 – 9.50
180	No. 5	8.50 – 9.50	8.50 – 9.00	8.50 – 9.00
200	No. 3	11.00 –12.00	11.00 –12.50	11.00 –12.50
200	No. 4	10.00 –11.50	10.00 –11.00	10.00 –11.00
200	No. 5	9.50 –11.00	9.50 –11.00	9.50 –11.00
220	No. 3	12.50 –13.50	12.50 –13.50	12.50 –13.50
220	No. 4	12.00 –12.50	12.00 –12.50	12.00 –12.50
220	No. 5	11.00 –12.00	11.00 –12.00	11.00 –12.00
240	No. 3	13.50 –15.50	13.00 –15.00	13.00 –15.00
240	No. 4	12.50 –14.50	12.00 –13.50	12.00 –13.50
240	No. 5	12.00 –14.00	11.00 –13.00	11.00 –13.00
280	No. 3	17.00 –18.00	16.00 –17.00	16.00 –17.00
280	No. 4	15.00 –17.00	14.00 –16.00	14.00 –16.00
280	No. 5	14.00 –15.50	13.00 –15.00	13.00 –15.00

†Prices nominal **††Only one refiner quoting** ***Quotations only** ****Represents Both Sales and Quotations.**

Refinery Markets Wax, Lubricants, Heavy Oil

Prices given below are in cents per gallon, except where $ is shown

(For quick reference to Refinery Prices, get the OIL PRICE HANDBOOK, published annually)

GULF COASTAL (F. o. b. Gulf Coastal refineries)

Vis.	Color	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
		(Viscosity at 100° F., pour test 0)		
100	No. 2 Pale	6.50 – 7.00	6.50 – 7.00	6.50 – 7.00
200	No. 3 Pale	9.50 – 9.75	9.50 – 9.75	9.50 – 9.75
300	No. 3 Pale	10.75 –11.00	10.75 –11.00	10.75 –11.00
500	No. 3½ Pale	12.00 –12.25	12.00 –12.25	12.00 –12.25
750	No. 4 Pale	13.50 –13.75	13.50 –13.75	13.50 –13.75
1200	No. 5 Pale	16.00 –16.50	16.00 –16.50	16.00 –16.50
200	No. 5½ Red Oil	8.75 – 9.00	8.75 – 9.00	8.75 – 9.00
300	No. 5½ Red Oil	10.00 –10.25	10.00 –10.25	10.00 –10.25
500	No. 6 Red Oil	11.25 –11.50	11.25 –11.50	11.25 –11.50
750	No. 6 Red Oil	12.75 –13.00	12.75 –13.00	12.75 –13.00
1200	No. 5-6 Red Oil	15.00 –15.25	15.00 –15.25	15.00 –15.25

‡CALIFORNIA (F. o. b. California refineries)

Vis.	Color	(Viscosity at 100° F.)		
100	No. 3	9.50 –10.00	9.50 –10.00	9.50 –10.00
200	No. 3	11.50	11.50	11.50
300	No. 3	13.00	13.00	13.00
450	No. 3	15.50	15.50	15.50
550	No. 3	16.50	16.50	16.50
600	No. 3	17.00	17.00	17.00
200	No. 5	11.00	11.00	11.00
300	No. 5	12.00	12.00	12.00
400	No. 5	14.00	14.00	14.00
500	No. 5	15.00	15.00	15.00
600	No. 5	16.00	16.00	16.00
700	No. 7	18.00	18.00	18.00

‡Neutral oils not manufactured commercially in California.

CYLINDER STOCKS

****OKLAHOMA** (F. o. b. Oklahoma refineries)

190-200 Vis. D at 210° Brt. St.	41.00 –42.00	41.00 –42.00	41.00 –42.00
150-160 Vis. D at 210° Brt. St., ‡5-15 pour test	37.00	37.00	37.00
150-160 Vis. D Brt. Stock, ‡15-50 pour test	36.00 –36.50	36.00 –36.50	.....
150-160 Vis. E 210° Brt. St.	35.00 –36.00	35.00 –36.00	35.00 –36.00
600 St. Ref. Olive Green	9.00 –10.00	9.00 –10.00	9.00 –10.00
600 St. Ref. Dark Green	9.00	9.00	9.00
Black Oil	5.00	5.00	5.00

‡Beginning Mar. 24.

PENNSYLVANIA (F. o. b. Western Penna. refineries) (A.S.T.M. Tests)

600 Steam Refined, filterable	23.50 –24.50	24.00 –25.00	24.00 –25.00
650 Steam Refined	29.00 –31.00	29.50 –31.00	29.50 –31.00
600 Flash	32.00 –33.00	32.00 –33.00	32.00 –33.00
630 Flash	35.00 –36.50	35.00 –36.50	35.00 –36.50
600 Warren E	29.00 –30.00	29.00 –30.00	29.50 –30.00
600 Oil City E	28.00 –30.00	28.00 –29.00	28.50 –30.00
600 D Filtered	34.00 –35.00	34.50 –35.00	35.00
Cold Test Stock, 40-50 p. p., 140-150 vis. at 210° 540-550 flash, No. 8 color	39.50 –41.00	39.50 –41.00	40.00 –41.00
40-50 p.p., 140-150 vis. at 210°, 540-550 flash, No. 6-6½ color diluted	38.00 –40.00	38.00 –40.00	38.00 –40.00

WAX

PENNSYLVANIA (Per pound, F. o. b. New York)

122-124 white crude scale, a.m.p.	2.625– 2.75	2.625– 2.875	2.875– 3.00
124-126 white crude scale, a.m.p.	2.625– 2.75	2.625– 2.875	2.875– 3.00

****OKLAHOMA** (Per pound in barrels; in a ew instances, per pound in burlap bags; F. o. b. Oklahoma refineries)

124-126 White Crude Scale, a.m.p.	2.50	2.50 – 2.625	2.50 – 2.625

CALIFORNIA

Prices on California wax discontinued, as very little is made in California

DISTILLATE, GAS AND FUEL OIL

PENNSYLVANIA (For outside Pittsburgh district)

36-40 fuel oil	4.25 – 4.50	4.375– 4.625	4.50 – 4.875
30-34 fuel oil	4.25 – 4.50	4.375– 4.50	4.375– 4.50
28-32 fuel oil	4.25 – 4.50	4.375– 4.50	4.375– 4.50

†Prices nominal **††Only one refiner quoting** ***Quotations only**

OKLAHOMA (F. o. b. Oklahoma refineries)

	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
38-40 straw distillate	3.00 – 3.25	3.00 – 3.25	3.125– 3.375
36-38 straw distillate	2.875	2.875	3.00 – 3.125
32-36 straw gas oil	2.625– 2.875	2.625– 2.875	2.625– 2.875
32-36 straw gas oil zero	3.00	3.00	3.00
32-36 dark gas oil	2.375– 2.50	2.375– 2.50	2.375– 2.625
32-36 dark gas oil zero	2.50 – 2.75	2.50 – 2.75	2.625– 3.00
28-30 zero fuel oil (per bbl.)	$1.05 – 1.10	$1.05 – 1.10	$1.05 – 1.10
28-30 fuel oil (per bbl.)	$0.95 –$1.00	$0.95 –$1.00	$1.00 – 1.05
26-28 fuel oil (per bbl.)	$0.85 – 0.95	$0.85 – 0.95	$0.85 – 0.95
24-26 fuel oil (per bbl.)	$0.80 – 0.85	$0.80 – 0.85	$0.80 – 0.85
22-26 fuel oil (per bbl.)	$0.75 – 0.80	$0.775– 0.80	$0.775– 0.80
18-22 fuel oil (per bbl.)	$0.625– 0.70	$0.65 – 0.75	$0.675– 0.775
16-20 fuel oil (per bbl.)	$0.60 – 0.70	$0.625– 0.70	$0.65 – 0.70
14-16 fuel oil (per bbl.)	$0.60 –$0.65	$0.625– 0.70	$0.65 – 0.70

KANSAS (F. o. b. refinery Kansas destination)

38-40 straw distillate	3.50 – 3.75	3.50 – 3.75	3.50 – 3.75
36-38 straw distillate	3.25	3.25	3.25
32-36 straw gas oil	3.25 – 3.50	3.25 – 3.50	3.25 – 3.50
18-22 fuel oil (per bbl.)	$0.80 – 0.85	$0.80 – 0.85	$0.80 – 0.85
10-14 fuel oil (per bbl.)	$0.725– 0.775	$0.725– 0.775	$0.725– 0.775

NORTH TEXAS (F. o. b. North Texas refineries)

38-40 straw distillate	3.00 – 3.25	3.00 – 3.25	3.00 – 3.25
38-40 p.w. treated distillate	3.25	3.25	3.25
32-36 gas oil, cracked	2.50	2.50	2.50
32-36 St. reduced gas oil	2.25 – 2.50	2.375– 2.50	2.375– 2.50
24-26 fuel oil (per bbl.)	$0.60 – 0.65	$0.60 – 0.65	$0.60 – 0.65
20-24 fuel oil (per bbl.)	$0.55	$0.575	$0.575
18-22 fuel oil (per bbl.)	$0.50	$0.55	$0.55

****WEST TEXAS** (F. o. b. West Texas refinery, for unrestricted shipment)

34-38 gas oil	2.50 – 2.75	2.50 – 2.75	2.50 – 2.75
30-32 gas oil	2.25 – 2.50	2.25 – 2.50	2.25 – 2.50
28-30 zero gas oil	2.50 – 2.875	2.50 – 2.875	2.50 – 2.875
18-22 fuel oil (per bbl.)	$0.60 – 0.80	$0.60 – 0.80	$0.60 – 0.80

NORTH LOUISIANA (N. La., Ark. and Miss. destination)

32-36 gas oil, dark	3.00	3.00	3.25
30-32 gas oil, straw	3.00	3.00	3.25
14-16 fuel oil (per bbl.)	$0.75 – 0.85	$0.75 – 0.85	$0.75 – 0.85

ARKANSAS (Ark., N. La. and Miss. destination)

30-32 gas oil, straw	3.00	3.00	3.25
32-36 dark gas oil	3.00	3.00	3.25
28-30 gas oil	2.75	2.75	3.00
20-24 fuel oil (per bbl.)	$0.95	$0.95	$0.95
9-12 fuel oil (per bbl.)	$0.75	$0.75	$0.75
Black oil	3.25	3.25	3.25

CALIFORNIA (F. o. b. San Joaquin Valley. Pipe line charge to San Francisco 24c per bbl. more and to San Pedro 20c per bbl. more.)

14-18 fuel oil (per bbl.)	$0.50 –$0.65	$0.45 –$0.55	$0.45 –$0.55
14-18 Bunker oil (per bbl.)	$0.70 –$0.75	$0.70 –$0.75	$0.70 –$0.75
30-34 gas oil (per bbl.)	$0.70 –$0.90	$0.70 –$0.90	$0.70 –$0.90
27 Plus Diesel oil (per bbl.)	$0.70 –$0.90	$0.70 –$0.90	$0.70 –$0.90

PETROLATUMS

PENNSYLVANIA (Per pound, in barrels, carload lots, f. o. b. refinery. In tank cars ⅝c to ¾c per pound less.) Two refiners quoting.

Snow White	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Lily White	7.25 – 7.50	7.25 – 7.50	7.25 – 7.50
Cream White	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50
Light Amber	3.50 – 3.625	3.50 – 3.625	3.50 – 3.625
Amber	3.25 – 3.375	3.25 – 3.375	3.25 – 3.375
Red	3.00	3.00	3.00

PETROLEUM COKE

****OKLAHOMA** (F. o. b. Oklahoma refineries)

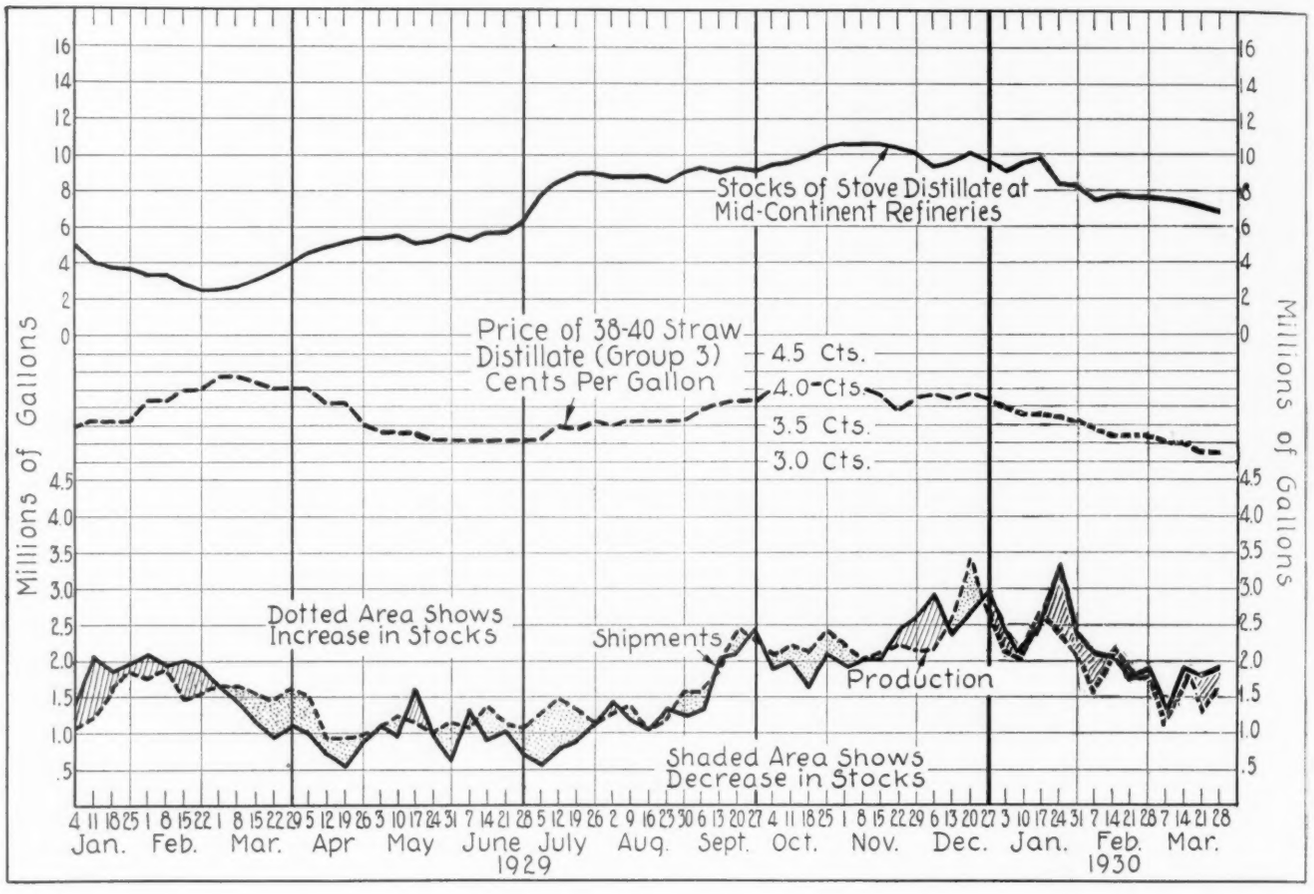
(Per ton in car lots)

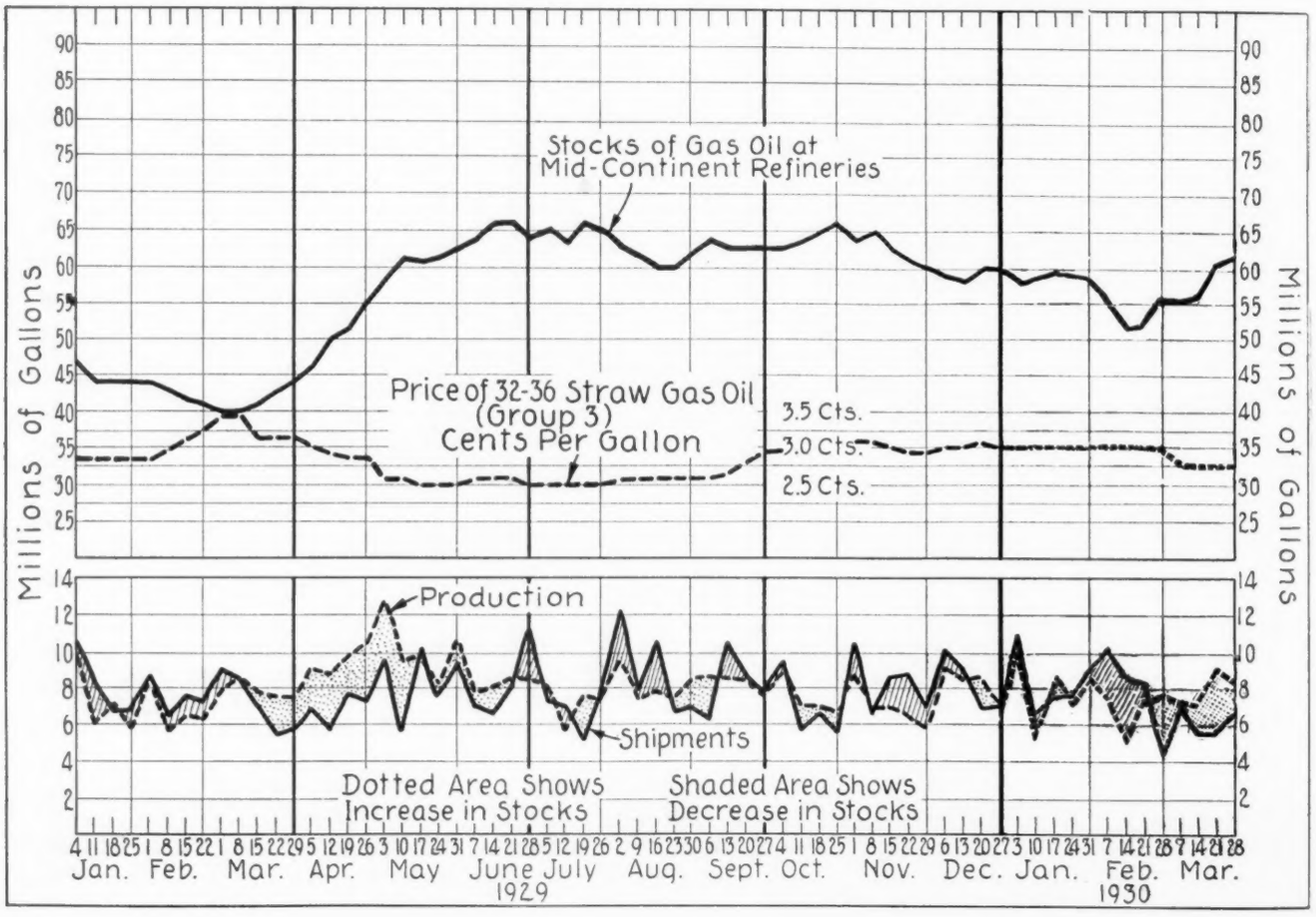
Lump	$4.50 – 5.00	$4.50 – 5.00	$4.50 – 5.00
Still run	$3.00	$3.00	$3.00
Breeze	$2.00	$2.00	$2.00

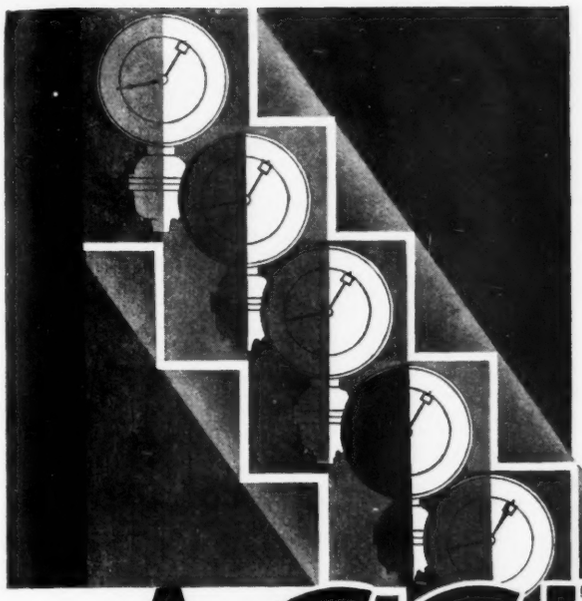
****Represents Both Sales and Quotations.**

Barometer of Mid-Continent Refinery Market—Week Ending March 28

Charted Course of Prices, Production, Shipments, Stocks of Principal Refined Products, Week by Week, From Reports Made by 93 Plants to National Petroleum News


Millions of Gallons
Stocks of Stove Distillate at Mid-Continent Refineries
Price of 38-40 Straw Distillate (Group 3) Cents Per Gallon
4.5 Cts.
4.0 Cts.
3.5 Cts.
3.0 Cts.
Dotted Area Shows Increase in Stocks
Shipments
Production
Shaded Area Shows Decrease in Stocks
Jan. Feb. Mar. Apr May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1929
1930


Millions of Gallons
Stocks of Gas Oil at Mid-Continent Refineries
Price of 32-36 Straw Gas Oil (Group 3) Cents Per Gallon
3.5 Cts.
3.0 Cts.
2.5 Cts.
Production
Shipments
Dotted Area Shows Increase in Stocks
Shaded Area Shows Decrease in Stocks
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar.
1929
1930



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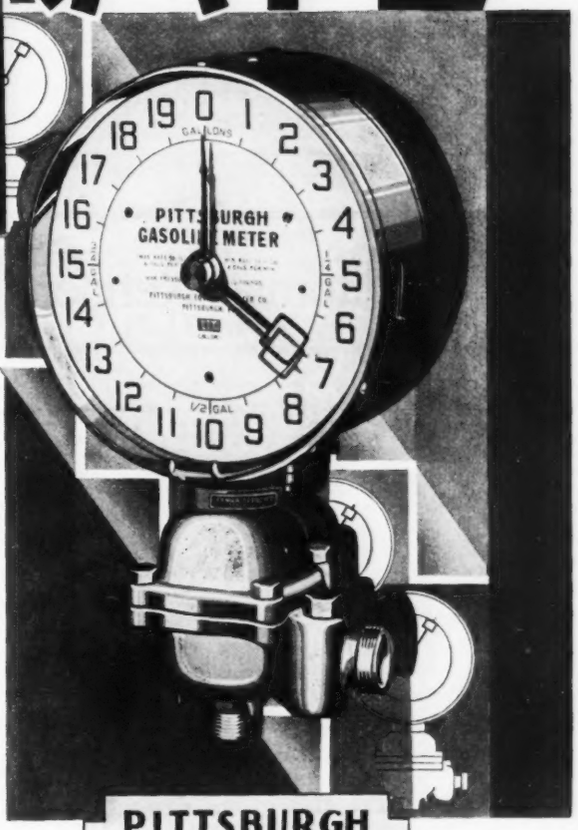
They must be to pass the rigid inspections and tests of Sealers of Weights and Measures. These authorities have set up certain specifications which must be met before the meter is approved. Pittsburgh Gasoline Meters are approved, and will outlast meters of other types because there are no gaskets, packing or piston rings to wear out and require replacement. It is a common sight to see Pittsburgh Gasoline Meters that have given years of accurate service still in the dispensing system.



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Barometer of Mid-Continent Refinery Market—Week Ending March 28

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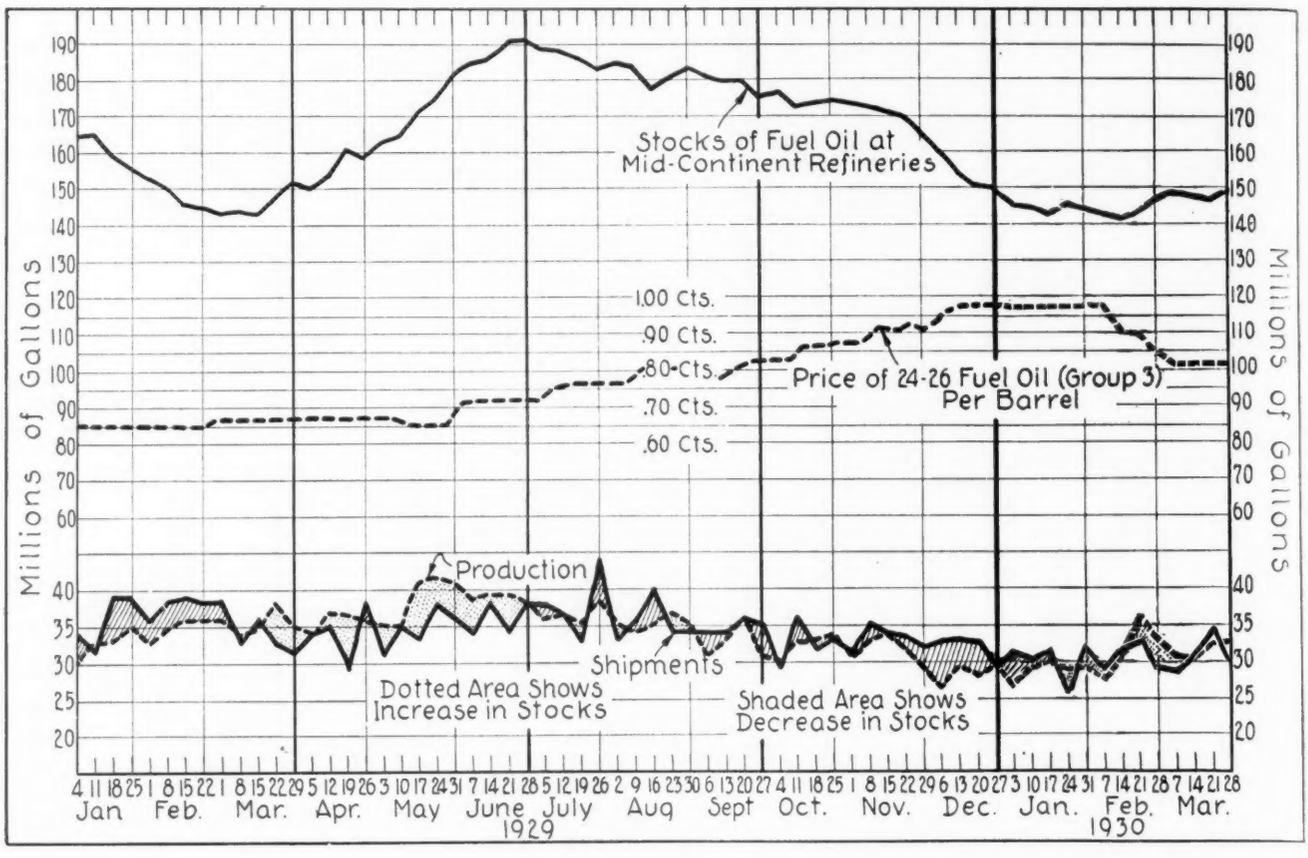

California Refinery Market

Local Price War Depresses Market

LOS ANGELES, March 29

A FEW scattered export inquiries furnished the only interest in California bulk markets the past week. Interest of the trade centered largely on the retail price war on the Pacific Coast which is covered elsewhere in this issue of NATIONAL PETROLEUM NEWS.

Intercoastal tanker rates were unchanged over the week ended March 22 and California shippers continued to see little chance of securing any spot business from eastern buyers as long as high freight rates and low prices on the Atlantic seaboard prevail.

Considerable interest was shown by the local trade in the prevailing low prices for natural gasoline. Companies with contracts based on tank wagon prices have found cause for complaint in quotations made by a number of natural gasoline manufacturers of from 7 to 7.50 cents. Many of these contracts provide for payment of 7.50 to 8 cents on the basis of prevailing tank wagon prices. Some of the trade reported they would make future contracts for this commodity based on actual retail prices.

One dealer reported he had purchased several tank cars of absorption gasoline at under 7 cents a gallon and a major company was reported offering some of this commodity, which it had been unable to move on contracts, at 7 to 7.25 cents.

With motor gasoline selling at relatively low prices in California, Independent refiners raised their quotation for shipment outside the state. Quotations ranged from 7.50 to 8.50 cents, with a few spot sales made at between 7 and 7.50 cents.

Gasoline for consumption within the state moved at 8.50 to 9.50 cents, tax additional.

As a result of the recent increase in crude schedules, quotations for fuel oil have been advanced. Few spot sales were made during the past week at less than $0.50 and a majority of the trade were quoting from $0.55 to $0.65 per barrel.

A major company was reported to have secured a three-year contract calling for delivery of approximately three cars of fuel oil per day to a point in Arizona. The price was reported as $0.475 per barrel.

Venezuelan Crude Quote Higher

NEW YORK, March 29.—Prices for Venezuelan crude oil have moved up the past two weeks although suppliers report there has been little demand from open market buyers. Most suppliers quote $0.75 per barrel, f.o.b. deepwater in the Lake Maracaibo district.

The higher price is the result of the curtailment program which is being carried on in Venezuela, several traders reported. Also there has been a steady movement of oil on contract to the United States and to the Continent. Several United States buyers were said to be interested in obtaining spot cargoes, but current high transportation rates have discouraged their buying.

Pennsylvania Market

April and Spot Gasoline Active

CLEVELAND, April 1—A considerably better tone was noted in the western Pennsylvania gasoline market throughout the last week of March. Prices improved only slightly but demand from the jobbing trade assumed much larger proportions. Demand for other oils for forward delivery also was on a larger scale than at any time previously this year and tended to break the monotony which has hovered over the market for several weeks past.

Reports of increased buying of gasoline by jobbers were heard from practically every section of the field. Several orders for lots of 25 and 50 cars of U. S. Motor were said to have been placed at around 7.50 cents, f.o.b. refinery, for shipment over April.

Most of the U. S. Motor under 7.50 cents was offered in competition with material moving into western New York state from other districts. Retail prices were slashed again in western New York state late last week bringing them down to the lowest levels prevailing in years.

Kerosene moved out in larger volume and April buying of this commodity also was active. The 45 w.w. kerosene still was available at 5.75 cents in one or two districts but indications were that offerings at this figure would be eliminated within a few days if demand continued at its recent pace. Fewer companies were offering the higher gravity kerosenes and prices for these grades worked higher with very little difficulty.

Fuel oil still was offered in sizable lots at 4.25 cents; several fairly large orders were reported placed, however, at 4.50 cents for shipment over April.

Inter-refinery buying of neutral oils was rather active last week and prices were steady. Bright stock manufacturers were active in the steam refined market paying approximately the same prices for their April requirements as they paid for March.

Demand for bright stock was relatively quiet but prices showed little, if any, change. Both 122-124 and 124-126 A.m.p. white crude scale were offered rather freely at 2.625 cents per pound, New York. Buying was fairly active at, and slightly under, this figure.

CHICAGO—John A. Watson, patent attorney, formerly with Wilson & McCanna of Chicago, and later in practice at Baltimore, is now with the development and patent department of the Standard Oil Co. of Indiana.

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Eastern Domestic Markets

Gasoline Price Shading Increases

Staff Special
NEW YORK, March 29

EASTERN gasoline markets failed to show any material change the past week although prices in some districts displayed signs of losing more ground.

Cold weather the first few days of the week had an adverse affect on jobber's sales. Buying was on a hand-to-mouth basis. Little interest was shown in future purchases and in the more northern districts posted prices were being shaded.

Prices for all grades of heavy oils were unchanged.

The market at points from Baltimore north generally were unsettled with the New York market playing the leading role. Last week's quotations continued to rule the market in the various districts but these were shaded in one or two instances as much as 1 cent a gallon.

At the beginning of the week the New York market gave some indication of going higher. Sellers reported a few sales at higher prices and one leading distributor reported that for the time being he was out of the market. Gasoline was available at 7.75 cents, the low of the market, at all times and the majority of sales began to fall to that level as the week progressed and the colder weather set in.

A further reduction in tank wagon prices at two principal upstate points March 28 depressed prices still farther. Several sellers reported it was virtually impossible to sell in the Buffalo and Rochester districts before the 1-cent tank wagon decline, by shipping from New York harbor, and that now that territory was entirely excluded.

The markets in New England were comparable with the New York harbor situation. Refiners prices were steady in Boston, Providence and Portland on tank car shipments, but at least one refiner sold 1 cent under the market on a quantity to move by barge.

One shipment of 300,000 barrels moved to a jobber in the Boston district at 8 cents delivered and another to Bridgeport, Conn., 150,000 barrels, at a price under the 9-cent delivered, posting. Refiners were reported adhering to Standard's plan of quoting tank car prices 5.50 cents delivered under the net service station price, only to the above mentioned points.

A few refiners at Philadelphia raised their prices to 8.50 cents which brought quotations in that market up 0.25 cent although sales at 8.25 cents were frequent and there were reports of shading that price. At more southern points where most of the gasoline moves on contract, better weather has brought about a steadier market.

California gasoline prices were more stable than U. S. Motor in their comparative districts. Unconfirmed reports were heard of shading 8.50 cents at Baltimore and one distributor in that district reported he would quote 8.25 cents on large orders. He had not taken any sizable volume of business at that price up to March 29. A Philadelphia distributor quoted 8.50 cents over April and was one of the few sellers to report sales for that period.

Reports were heard late in the week that a cargo of California gasoline had been sold to an east coast buyer at 7.125 cents, delivered. Also it was reported five cargoes were offered in the market at 7 cents delivered. Some of the trade believed these cargoes might be inter-company offerings and the reported price authentic if transportation charges were figured on actual ship operation costs, and not on the prevailing tanker market. If the ships were chartered at the rate of $0.65 per barrel which the trade reports the actual cost of operation, this price would net back approximately 5.50 cents per gallon f.o.b. California ports, which price compares with 5.75 to 6 cents per gallon quoted by California refiners to open market buyers.

Gulf Coast Markets

Bunker Oil Prices Higher; Gas Oil Lower

Staff Special
NEW YORK, March 29

CONFLICTING trends in heavy oil prices were apparent at the Gulf the past week. There was an inquiry in the market early in the week for a part cargo of gasoline, but aside from this there was no activity. Gas oil for domestic shipment was available at lower prices.

Early in the week a New York supplier reported receiving an inquiry for 25,000 barrels of 60-62, 400 end point gasoline from a French independent buyer. He was in position to quote a price lower than that posted by the Export association, but the buyer withdrew his inquiry later in the week. Difficulty was experienced in obtaining space for prompt movement of the gasoline which the buyer wanted.

The English buyer who last week inquired for 40,000 tons of bunker C fuel oil, also withdrew his inquiry. The California refiner who was negotiating for the business refused to reveal his quotation and said he expected the account to re-enter the market in a few weeks.

Prices for bunker C fuel oil in cargo lots moved higher toward the end of the week. Several suppliers were quoting $0.75 per barrel although $0.70 could be done in one or two directions for prompt movement.

On the west coast bunker C fuel oil was reported available at $0.65 to $0.70 cents in cargo lots, and some of the trade believed the low quotation might be shaded with a firm offer. Low gravity bunker C was reported available below $0.65. For bunkering purposes suppliers were quoting $0.75 per barrel.

Kerosene and 64-66, 375 end point gasoline in cases were quoted 5 to 10 cents per case lower. There was some slacking up in the demand for high gravity gasolines which accounted for the decrease in prices, sellers said. Lower kerosene prices were largely the result of the reduction made recently in bulk kerosene by the Export association. The price for U. S. Motor in cases was unchanged at $1.85.

Gas oil prices continued to seek lower levels as demand fell off, the trade reported. Also there has been less gas oil cracked due to the reduction in refinery operations. As a result 26-30 translucent was quoted at 3.50 to 3.75 cents per gallon and 30 plus translucent at 3.875 to 4 cents.

Panuco crude prices were tending lower although there were no price reductions made the past week. One seller indicated he would sell below $0.70 f.o.b. Tampico, if a buyer were to make a firm offer.

Gas oil for domestic shipment also was available at lower prices toward the end of the week. A Baltimore buyer was in the market for approximately 200,000 barrels for shipment over the remainder of the year, on which he had been quoted a price which he indicated was below 3.75 cents, f.o.b. the Gulf.

Wax Markets

Foreign Bids Still Unattractive

NEW YORK, March 29.—Prices for waxes were generally unchanged the past week both at the Gulf and New York. Foreign buyers continued to bid prices which were too low to be attractive to sellers. Few sales were reported either of fully refined or crude scale waxes.

One grade of fully refined wax was quoted lower in both markets. Suppliers were quoting 3.625 cents as the low and up to 3.875 cents for 125-127 A.m.p. at New York, with the high Gulf quotation at 3.75 cents. Stocks of this grade were said to be heavy. Some traders believed 3.625 cents could be shaded but there were no quotations on sales reported at less than this price.

Early in the week United Kingdom buyers were bidding 2.95 cents c.i.f. for white crude scale but this figure dwindled to 2.92 cents as reports became more numerous that larger quantities of wax were available at the low of the quotation range. Some sellers were offered 2.50 cents per pound f.a.s. New York for prompt shipment and believed they might obtain 2.60 cents for forward movement.

Refiners showed no interest in these various offers however. There were unconfirmed reports of wax moving in small quantities at 2.60 f.a.s. New York. The trade believed if these sales actually were made, they were made to the domestic trade and not shipped for export. Sellers indicated they could not sell at these figures for forward shipment even though it was generally admitted by the trade that storage is almost at the running over point. The small refiner who was forced to move wax was primarily the price setter the trade said.

A broker the past week, offered 2.50 cents f.a.s. New York for 3000 tons of white crude scale to move over the next 12 months. He specified shipments of 500-ton parcels each month. This business had not been closed up to the end of the week.

Match wax in tight barrels was quoted by three of the largest manufacturers on the east coast from 3.50 to 4 cents, f.a.s. New York. Prices for this wax have fluctuated little during the past several weeks because of the comparatively small amount manufactured. There has been no great demand for it although refiners have been shipping regularly on contracts to South America, Africa and various other countries.

RICHMOND, Va.—Properties of the Central Oil Co. here have been sold to the Sinclair Refining Co. Creed Alderson will be agent for the Sinclair here.

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Complete Seaboard Market

(Export Markets for whole year given in OIL PRICE HANDBOOK. Each volume carries refinery, tank wagon, crude and export markets complete for the whole year)

Eastern Domestic Market

(Prices for tank car lots, f. o. b. refinery or seaboard terminal, representing majority of sales and quotations. Prices shown below do not include inspection tax levied in some states.)

	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
U. S. MOTOR GASOLINE			
New York harbor	†7.75 – 8.50	†7.75 – 8.50	7.75 – 8.00
Portland district	*9.30	*9.30	*9.30
Boston district	*9.00	*9.00	*9.00
Providence district	*9.00	*9.00	*9.00
Philadelphia district	8.25	8.25	8.25
Baltimore district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Norfolk district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Charleston district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Savannah district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Jacksonville district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
CALIFORNIA, U. S. MOTOR GASOLINE			
New York harbor	†8.50 – 8.75	†8.50 – 8.75	8.50
Philadelphia district	8.25 – 8.50	8.25 – 8.50	8.25 – 8.50
Baltimore district	8.50	8.50	8.50
WATER WHITE KEROSENE			
New York harbor	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
Philadelphia district	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
Baltimore district	7.25 – 7.75	7.25 – 7.75	7.25 – 7.75
GAS OIL: 28-34 Gravity			
New York harbor	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
Boston district	4.75 – 5.25	4.75 – 5.25	4.75 – 5.25
FURNACE OIL: 36-40 Gravity			
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Boston district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
GRADE C BUNKER OIL (Lighterage 5c per bbl. additional)			
New York Harbor	$1.05	$1.05	$1.05
Boston district	$1.05	$1.05	$1.05
DIESEL OIL			
New York harbor	$2.00 –$2.10	$2.00 –$2.10	$2.00 –$2.10

Note: Above gasoline prices do not include inspection tax levied in some states. *Minimum delivered. †Nominal. **Delivered prices.

New York Export Market

(Lubricating oils are per gal. in bbls. F.a.s. New York)

	Mar. 31	Mar. 24	Mar. 17
CYLINDER OILS (Pennsylvania Products)			
Bright stock, dark	45.50 –47.00	45.50 –47.00	45.50 –47.00
600 D filtered	38.75 –40.00	38.75 –40.00	38.75 –40.00
600 Warren E filtered	35.00 –37.00	35.00 –37.00	35.00 –37.00
600 s.r. unfiltered	29.50 –31.00	29.50 –31.00	29.50 –31.00
650 s.r. unfiltered	36.00 –37.00	36.00 –37.00	36.00 –37.00
600 flash, s.r.	38.00 –40.00	38.00 –40.00	38.00 –40.00
630 flash, s.r.	43.00 –44.00	43.00 –44.00	43.00 –44.00
RED ENGINE OILS (Vis. 100°)			
300 vis. No. 6½ color	20.00 –21.00	20.00 –21.00	20.00 –21.00
250 vis. No. 6 color	17.50 –18.50	17.50 –18.50	17.50 –18.50
200 vis. No. 6 color	16.50 –17.50	16.50 –17.50	16.50 –17.50
PALE ENGINE OILS (Vis. 100°)			
230 vis. No. 3¾ color	23.00 –24.00	23.00 –24.00	23.00 –24.00
180 vis. No. 3¼ color	19.00	19.00	19.00
100 vis. No. 2¼ color	15.50 –16.00	15.50 –16.00	15.50 –16.00
MOTOR OILS (Vis. 100°)			
600 vis. No. 7 color	30.00	30.00	30.00
500 vis. No. 6½ color	26.50 –27.50	26.50 –27.50	26.50 –27.50
400 vis. No. 7¼ color	23.00 –25.00	23.00 –25.00	23.00 –25.00
300 vis. No. 6 color	20.00 –22.00	20.00 –22.00	20.00 –22.00
200 vis. No. 6 color	18.00 –20.00	18.00 –20.00	18.00 –20.00

Wax Markets

(Prices in cents per pound, A.S.T.M. tests; A.M.P.)

NEW YORK (F.a.s. carload lots)	Mar. 31	Mar. 24	Mar. 17
124-126 Yellow crude scale	2.625	2.625	2.75
122-124 White crude scale	2.625– 2.75	2.625– 2.75	2.75 – 2.875
124-126 White crude scale	2.625– 2.75	2.625– 2.75	2.75 – 2.875
123-125 Fully refined	3.50 – 3.625	3.50 – 3.625	3.75 – 4.00
125-127 Fully refined	3.625– 3.875	3.75 – 3.875	3.875– 4.00
128-130 Fully refined	4.00 – 4.25	4.00 – 4.25	4.25
130-132 Fully refined	4.50	4.50	4.50
133-135 Fully refined	5.00 – 5.25	5.00 – 5.25	5.375– 5.50
135-137 Fully refined	5.50 – 5.75	5.50 – 5.75	5.75
NEW ORLEANS (F.a.s. carload lots)			
124-126 Yellow crude scale	2.625	2.625	2.75
122-124 White crude scale	2.625– 2.75	2.625– 2.75	2.75 – 2.875
124-126 White crude scale	2.625– 2.75	2.625– 2.75	2.75 – 2.875
123-125 Fully refined	3.50	3.50	3.75 – 3.875
125-127 Fully refined	3.625– 3.75	3.75	3.875– 4.00
128-130 Fully refined	3.875– 4.125	3.875– 4.125	4.125
130-132 Fully refined	4.375	4.375	4.375
133-135 Fully refined	5.00 – 5.25	5.00 – 5.25	5.50

Gulf Export Market

(Prices are f. o. b. Gulf oil terminals in Texas and Louisiana, shipments of 20,000 bbls. or more unless otherwise noted.)

GASOLINE	Mar. 31	Mar. 24	Mar. 17
U. S. Motor	†8.00	8.00	8.00
60-62, 400 e.p.	†9.00	9.00	9.00
61-63, 390 e.p.	†9.25	9.25	9.25
64-66, 375. e.p.	†9.50	9.50	9.50
U. S. Motor, cases (cargoes)	$1.85	$1.85	$1.85
64-66, cases (cargoes)	$2.05	$2.05	$2.05

†These prices are posted quotations of the Export Petroleum Assoc., Inc., governing about 90% of the gasoline and kerosene shipped to foreign ports from the Gulf.

KEROSENE	Prices Mar. 31	Prices Mar. 24	Prices Mar. 17
44 water while	†7.00	7.00	7.00
41-43 prime white	†6.00	6.00	6.00
Water white, cases (cargoes)	$1.85	$1.85	$1.85
Prime white, cases (cargoes)	$1.75	$1.75	$1.75

†These prices are posted quotations of the Export Petroleum Assoc., Inc., governing about 90% of the gasoline and kerosene shipped to foreign ports from the Gulf.

DOMESTIC GAS & BUNKER OILS			
*26-30 translucent gas oil	3.50 – 3.75	3.625– 3.875	3.625– 3.875
*30 plus translucent gas oil	3.875– 4.00	3.875– 4.125	3.875– 4.125
Grade C bunker oil	$0.95	$0.95	$0.95
Grade C bunker oil, cargoes	$0.70 –$0.75	$0.70	$0.68 –$0.70

*Less than ½ of 1% sulphur.

MEXICAN CRUDE AND BUNKER OILS (f. o. b. Steamer, Tampico)			
Heavy Panuco crude taxes to be paid	$0.70 –$0.75	$0.70 –$0.75	$0.70 –$0.75
Grade C bunker oil for bunkering purposes, taxes paid	$1.00	$1.00	$1.00

SOUTH TEXAS LUBRICATING OILS (Viscosity at 100°F. cold test 0. Tanker, f. o. b. Houston)			
100 vis. No. 2 unfiltered pale	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00
200 vis. No. 3 unfiltered pale	8.00 – 8.50	8.00 – 8.50	8.00 – 8.50
300 vis. No. 3 unfiltered pale	8.875– 9.50	8.875– 9.50	8.875– 9.50
500 vis. No. 3½ unfiltered pale	10.25 –11.25	10.25 –11.25	10.25 –11.25
750 vis. No. 4 unfiltered pale	12.50 –12.75	12.50 –12.75	12.50 –12.75
1200 vis. No. 5 unfiltered pale	16.00 –18.00	16.00 –18.00	16.00 –18.00
200 vis. No. 5-6 red oil	7.00 – 7.25	7.00 – 7.25	7.00 – 7.25
300 vis. No. 5-6 red oil	8.375– 8.50	8.375– 8.50	8.375– 8.50
500 vis. No. 5-6 red oil	9.25 – 9.50	9.25 – 9.50	9.25 – 9.50
750 vis. No. 5-6 red oil	11.50	11.50	11.50
1200 vis. No. 5-6 red oil	15.00 –15.25	15.00 –15.25	15.00 –15.25

Gulf Domestic Market

(Prices are f.o.b. Gulf oil terminals in Texas and Louisiana in shipments of 20,000 bbls. or more, representing sellers' opinions, for domestic shipment only.)

	Mar. 31	Mar. 24	Mar. 17
U. S. Motor gasoline	7.00 – 7.125	7.00 – 7.125	7.00 – 7.125
41-43 w.w. kerosene	5.875– 6.25	5.875– 6.25	5.875– 6.25
*26-32 translucent gas oil	3.75 – 4.00	3.875– 4.125	3.875– 4.125

*Less than ½ of 1% sulphur.

Pacific Export Market

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

	Mar. 31	Mar. 24	Mar. 17
Gasoline, U. S. Motor, 53-55 Gravity	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00
Gasoline, U. S. Motor-blends and special cuts	7.25 –10.00	7.25 –10.00	7.25 –10.00
Gas Oil, 30-34, per barrel	$0.80 –$1.05	$0.80 –$1.05	$0.80 –$1.05
Diesel Oil, 27 plus, per barrel	$0.75 –$1.00	$0.75 –$1.00	$0.75 –$1.00
Bunker oil, 14-18, per barrel	$0.65 –$0.85	$0.65 –$0.85	$0.65 –$0.85
Fuel oil, 14-18 per barrel	$0.60 –$0.85	$0.60 –$0.85	$0.60 –$0.85
Kerosene, 38-40 w.w., 125-150 flash, per gal.	5.00 – 6.00	5.00 – 6.00	5.00 – 6.00
Cased Goods			
Gasoline, U. S. Motor	$1.75 –$1.85	$1.75 –$1.85	$1.75 –$1.85
Kerosene, 38-40 w.w., 125-150 flash	$1.45 –$1.50	$1.45 –$1.50	$1.45 –$1.50

†**Note:** Above Pacific Export market prices for gasoline and kerosene in cargo lots apply only on goods for coastwise shipment. Gasoline and kerosene prices for shipment to foreign ports are determined as follows: Difference in freight between U. S. Gulf to European Continent and California to European Continent —this difference plus 0.125c for handling, deducted from prices posted at U. S. Gulf by the Export Petroleum Assoc., Inc., which are above prices.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to American ports, cents per barrel.)

	Mar. 31 Crude & or Fuel	Refined Oil & /or Spirits
Calif. to U. K. or Continental ports*	35-40	45-50
Gulf to U. K. or Continental ports*	26-28	32/6
North Atlantic to U. K. or Continental ports*	23/6-25	27-30
Calif. to North Atlantic ports (not E. of N. Y.)	$0.90-$1.00	$0.90-$1.00
Gulf to North Atlantic ports (not E. of N. Y.)**	35-37	36-38

*Continental ports in the range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate. For Tampico 3c to 4c per bbl. additional.

An Oil Jobber *Should Jump At This!*

FREEDOM offers you a 100% Pennsylvania motor oil that can be supplied to your trade with your own brand name.

More than 700 jobbers throughout the country are receiving regular shipments under this plan. And it pays them handsomely too. It enables them to market a high-quality product at a wider margin of profit.

If you have your own specifications we'll make up (Sharples Process) a motor oil that exactly meets them. Or we'll be glad to recommend one of our own tested specifications.

Shipments are made whenever you want them in tank cars, compartment tank cars or drums. Full information is yours for the asking.

THE FREEDOM OIL WORKS CO.
Refineries at FREEDOM and CORAOPOLIS, PA.

Also available for immediate shipment

85/90 Viscosity Bright Stock
100% Pennsylvania Neutrals
600 Steam Refined
650 Steam Refined
600 Flash Steam Refined
Freedom Filtered Kerosene Oil

FREEDOM

100% PENNSYLVANIA OILS

FO-502

Box Type Cases

Attractive and serviceable cases of black cobra grain Keratol and lined with red velveteen. Comfortable handle. Plain bottles in separate compartments.

No. 260—Contains twelve 2-oz. long bottles and five ¼-oz. tall grease jars..... **$3.20**

No. 261—Contains six 4-oz. bottles and five ½-oz. grease jars..... **$3.55**

No. 262—Contains seven 4-oz. bottles and five grease jars..... **$3.80**

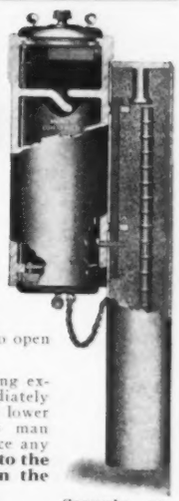
No. 263—Contains nine 4-oz. bottles and four ½-oz. grease jars..... **$4.25**

10% discount for Cash
Other Styles in our FREE Catalog

L-U-C-E

Builders of Sales Luggage
614 Delaware Kansas City, Mo.

Stop "Hold Ups"



The Kewanee (Type B-300) two-compartment Safe completely foils the hold-up man who dashes into a station and forces the manager or clerks to open the safe.

For with a Kewanee everything except "change money" is immediately deposited *thru the slot* into the lower compartment. The hold-up man can't open it. Nor can he force any one to open it because **the key to the lower compartment isn't in the station.**

KEWANEE SAFE — OFFICIAL PROTECTION

Securely anchored in concrete, or to the floor joists, it can't be carried away. And it's immune from the best set of burglar tools ever made.

When the station is closed the upper, change-money compartment is secured with a dial combination lock door, which also "dogs" the lower door so that the door to the lower compartment can't be removed (even with the key) unless the top door is first removed.

All-Around Money Protection

Listed as Standard by the Board of Underwriters this safe has saved countless dollars from both hold-up men and burglars.

Occupies small space. Can be hidden in a closet or under a counter. Easily installed and **costs less than you are apt to lose in just one hold-up.**

Write for information and prices.

KEWANEE SAFE CO.
4200 Burlington St. KEWANEE, ILL.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

(OIL PRICE HANDBOOK has t.w. and s.s. markets for a whole year, arranged for quick reference)

These Prices in Effect Mar. 31, 1930, as Posted by Principal Marketing Companies

S.O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlantic City, N. J.	14.5	2	16.5	18.5	13.5
Newark, N. J.	13.5	2	15.5	17.5	12.5
Annapolis	14	4	18	20	13
Baltimore, Md.	13.2	4	17.2	19.2	10.5
Cumberland, Md.	15	4	19	21	14
Washington, D. C.	13.7	2	15.7	17.7	12.7
Danville, Va.	14.8	5	19.8	21.8	13.8
Norfolk, Va.	13.3	5	18.3	20.3	11
Richmond, Va.	13.7	5	18.7	20.7	12.7
Roanoke, Va.	15	5	20	22	14
Petersburg, Va.	14.3	5	19.3	21.3	13.3
Charleston, W. Va.	14.5	4	18.5	20.5	12.5
Keyser, W. Va.	15.1	4	19.1	21.1	14.1
Parkersburg, W. Va.	13.2	4	17.2	19.2	11.2
Wheeling, W. Va.	14.4	4	18.4	20.4	12.4
Charlotte, N. C.	15.3	5	20.3	22.3	14.3
Hickory, N. C.	15.8	5	20.8	22.8	14.8
Mt. Airy, N. C.	15.5	5	20.5	22.5	14.5
Salisbury, N. C.	15.7	5	20.7	20.7	14.7
Charleston, S. C.	13.3	6	19.3	21.3	12.3
Columbia, S. C.	15.2	6	21.2	23.3	14.2

Note: 2c per gallon discount off t.w. price of gasoline to dealers and commercial consumers thru S. O. New Jersey territory.

CONTINENTAL OIL

Denver, Colo.	12	4	16	18	15.5
Pueblo, Colo.	14	4	18	19	15.5
Grand Junc., Colo.	18	4	22	25	19
Casper, Wyo.	14	4	18	21	14
Cheyenne, Wyo.	15.5	4	19.5	22.5	15.5
Butte, Mont.	18.5	5	23.5	26.5	20
Helena, Mont.	18.5	5	23.5	26.5	20
Salt Lake City, Utah	16.5	3½	20	20	17
Boise, Ida.	18.5	5	23.5	26.5	19
Twin Falls, Ida.	18.5	5	23.5	27.5	19
Albuquerque, N. M.	15	5	20	22	17

S. O. CALIFORNIA

				*Plant	
Phoenix, Ariz.	14	4	18	22	20
Los Angeles, Cal.	16.5	3	19.5	22.5	15.5
Fresno, Cal.	17	3	20	23	17
San Francisco, Cal.	17	3	20	23	15.5
Reno, Nev.	21	4	25	28	19
Portland, Ore.	15.5	4	19.5	22.5	16.5
Seattle, Wash.	15.5	3	18.5	21.5	16.5
Spokane, Wash.	19.5	3	22.5	25.5	20.5
Tacoma, Wash.	15.5	3	18.5	21.5	16.5

Note: 4c per gal. discount to dealers off t.w. price of gasoline to customers taking tank truck delivery, thru S. O. California territory except 1c discount at Phoenix to dealers only.

*Prices in the fourth column represent retail sale prices of gasoline for delivery into fuel tanks of customers' automotive equipment at S. O. California refineries, terminals and district depots as this company operates no retail service stations.

S. O. LOUISIANA

Little Rock, Ark.	11	5	16	16	13
Alexandria, La.	‡12	4	‡16	18	†14
Baton Rouge, La.	11	4	15	15	†14
Lake Charles, La.	††12	4	††16	††18	†14
New Orleans, La.	*11	4	*15	15	†12
Shreveport, La.	11	4	15	17	†14
Lafayette, La.	**13	4	**17	**19	†14
Bristol, Tenn.	14	5	19	21	14
Chattanooga, Tenn.	14	5	19	20	13
Knoxville, Tenn.	14	5	19	20	16
Nashville, Tenn.	13	5	18	20	16
Memphis, Tenn.	12	5	17	19	12.5

Note: 2c per gallon discount off t.w. price of gasoline to dealers thru S. O. Louisiana territory.

*New Orleans gasoline prices include 1c parish tax in addition to 4c state tax, and kerosene prices include 1c state tax and 1c parish tax.

†Kerosene price in Louisiana includes 1c state tax.

**Lafayette gasoline prices include 1c parish tax in addition to 4c state tax.

††Lake Charles gasoline prices include 1c parish tax.

‡Alexandria gasoline prices include 1c parish tax.

S. O. KENTUCKY

Ashland, Ky.	14	5	19	21	15
Catlettsburg, Ky.	14	5	19	21	15
Lexington, Ky.	13	5	18	20	14.5
Louisville, Ky.	14	5	19	21	13
Covington, Ky.	14	5	19	20	14.5
Clarksdale, Miss.	13	5	18	20	12.5
Gulfport, Miss.††	15.5	5	20.5	22.5	13
Jackson, Miss.	14	5	19	21	13
Natchez, Miss.	13.5	5	18.5	20.5	13
Vicksburg, Miss.	13.5	5	18.5	20.5	13
Birmingham, Ala.‡‡	16	4	20	22	14.5
Mobile, Ala.‡	13	4	17	17	13.5
Montgomery, Ala.*	16	4	20	22	15

Latest Changes in Tank Wagon Prices

Gasoline

S. O. New York—T.w. and s.s. cut 1c, Buffalo and Rochester, to 13.8c and 15.8c and 14c and 16c respectively, including 2c tax, **Mar. 28.**

S. O. Ohio—T.w. up 3c, s.s. 4c, Grand Prairie township in Marion county, to state wide prices of 18c and 19c, **Mar. 26.**

S. O. Kentucky—T.w. only cut 1c, Ashland and Catlettsburg, both to 19c, s.s. remaining unchanged at 21c, **Mar. 27.**

S. O. Louisiana—S.s. only cut 2c, Little Rock, to 16c, same as t.w., **Mar. 27.**

Continental Oil—S.s. only up 1c, Twin Falls, to 27.5c, t.w. remaining unchanged at 23.5c, **Feb. 26.**

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Atlanta, Ga.	14	6	20	22	†15.5
Augusta, Ga.	15	6	21	23	†15.5
Macon, Ga.	15	6	21	23	†14
Savannah, Ga.	14	6	20	22	†14
Jacksonville, Fla.	14	6	20	22	14
Miami, Fla.	15	6	21	23	14
Tampa, Fla.	14	6	20	22	13
Pensacola, Fla.**	12	6	18	20	13.5

Note: Net price of gasoline to dealers is 2c under posted t.w. price thru S. O. Kentucky territory.

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

†Georgia kerosene prices include 1c state tax.

**Both tank wagon prices include 1c city tax at Pensacola which went into effect Oct. 15, 1926.

††Both tank wagon prices at Gulfport include Harrison county privilege tax of 2c.

‡Mobile gasoline prices include 1c city tax.

‡‡Birmingham gasoline prices include 1c city tax.

S. O. NEBRASKA

Omaha, Neb.	14.25	4	18.25	20.25	13.25
McCook	15.75	4	19.75	21.75	14.75
Norfolk	14.75	4	18.75	20.75	13.75
North Platte	15.75	4	19.75	21.75	14.50
Scottsbluff	15.75	4	19.75	21.75	14.25

S. O. INDIANA

Chicago, Ill.	14	3	17	18	13
Decatur, Ill.	14.2	3	17.2	18.2	13.1
E. St. Louis, Ill.	13.4	3	16.4	17.4	12.2
Joliet, Ill.	14.4	3	17.4	18.4	13.3
Peoria, Ill.	14.2	3	17.2	18.2	13.1
Quincy, Ill.	14.2	3	17.2	18.2	12.9
Indianapolis, Ind.	14.2	4	18.2	19.2	14.2
Evansville, Ind.	14	4	18	19	14
South Bend, Ind.	14.4	4	18.4	19.4	14.4
Detroit, Mich.	14.8	3	17.8	18.8	14.7
Grand Rapids, Mich.	14.7	3	17.7	18.7	14.6
Saginaw, Mich.	14.9	3	17.9	18.9	14.8
Green Bay, Wisc.	14.6	2	16.6	17.6	13.4
Madison, Wisc.	14.3	2	16.3	17.3	13.1
Milwaukee, Wisc.	14.1	2	16.1	17.1	12.9
La Cross, Wisc.	15.2	2	17.2	18.2	14
Minneapolis, Minn.	15.2	3	18.2	19.2	13.9
Duluth, Minn.	15.5	3	18.5	19.5	13.9

	Gasoline T.W.	Tax	Total T.W.	S.S.	Oil T.W.
Mankato, Minn.	15.1	3	18.1	19.1	13.7
Des Moines, Ia.	14.5	3	17.5	18.5	13.3
Davenport, Ia.	14.5	3	17.5	18.5	13.3
Sioux City, Ia.	14.1	3	17.1	18.1	12.9
Mason City, Ia.	14.5	3	17.5	18.5	13.3
St. Louis, Mo.	*13.9	2	15.9	16.9	12.3
Kansas City, Mo.	†14.9	2	16.9	17.9	11.6
St. Joseph, Mo.	†14.5	2	16.5	17.5	12.2
Fargo, N. D.	16.9	3	19.9	20.9	15.9
Grand Forks, N. D.	17.2	3	20.2	21.2	16.2
Minot, N. D.	16.9	3	19.9	20.9	15.9
Pierre, S. D.	15	4	19	20	14.4
Huron, S. D.	15.3	4	19.3	20.3	14.7
Wichita, Kans.	12.8	3	15.8	14.8	11.8
Bartlesville, Okla.	12.5	4	16.5	17.5	11.5

S. O. Indiana's quantity contract price schedule thru territory (except in Chicago and Detroit, which see below) on tank truck deliveries of gasoline, figured from the service station price is 2c for 500 gals. or more a month; 2½c for 2,000 gals. or more a month; 3c for 6,000 gals. or more a month; and 4½c for 100,000 gals. or more a month.

In Chicago and vicinity, these discounts apply: Over 500 gals. per month, 2c per gal. off service station price; over 1,000 gals. per month, 4c per gal. off service station price; over 50,000 gals. per month, 4½c per gal. off s.s. price; over 75,000 gals., 5c off.

In Detroit, dealers and consumers signing contract for all gasoline for one year, get 4c per gal. off s.s. price. Non-contracted accounts get 3c off s.s. price. Those buying 100,000 gals. or more a month, 4½c per gal. off s.s. price.

*Includes city tax of ½c.

†Includes city tax of 1c.

S. O. OHIO

Ohio state-wide	14	4	18	19	12
†Darke, Hancock, Preble and Scioto Counties	13	4	17	17	†12
Athens County	11	4	15	15	12

Note: Discount to dealers and commercial accounts generally thru Ohio is 2c per gal. off t.w. price with some exceptions. In counties where prices are below normal, discount is 3c per gal. off t.w. price.

†Kerosene t.w. price in Darke County is 10c; in Paulding County 11c.

MAGNOLIA PETROLEUM

Muskogee, Okla.	10	4	14	16	10
Oklahoma City	11	4	15	18	10
Tulsa, Okla.	11	4	15	19	10
Fort Smith, Ark.†	10	†4	14	16	12
Little Rock, Ark.	13	5	18	18	13
Texarkana, Ark.*	11	*4	15	17	12
Dallas, Tex.	12	4	16	20	12
Fort Worth, Tex.	12	4	16	19	12
Houston, Tex.	11	4	15	19	11
San Antonio, Tex.	11	4	15	19	11
El Paso, Tex.	12	4	16	20	14

*Within city of Texarkana, the state tax on gasoline is 4c per gal. conforming with the Texas state tax. In this district outside of the city the 5c Arkansas tax applies.

†Within city of Fort Smith, Oklahoma tax of 4c applies. In this district outside of the city, the 5c Arkansas tax applies.

S. O. NEW YORK

Due to local price conditions at many points in S. O. New York territory, actual prices on both gasoline and kerosene are being made at under the posted tank wagon prices published below.

Greater New York City: Boroughs of Manhattan, Bronx, Queens & Kings	12.3	2	14.3	16.3	11.3
Borough of Richmond	12.7	2	14.7	16.7	11.7
Albany, N. Y.	13.6	2	15.6	17.6	12.6
Buffalo, N. Y.	11.8	2	13.8	15.8	11.8
Rochester, N. Y.	12	2	14	16	12
Syracuse, N. Y.	11.8	2	13.8	15.8	12.8
Boston, Mass.	12.5	2	14.5	16.5	11.5
Augusta, Me.	13.8	4	17.8	19.8	12.8
Manchester, N. H.	13.4	4	17.4	19.4	12.4
Burlington, Vt.	14.3	4	18.3	20.3	13.3

Note: S. O. New York allows 3c off t.w. price to dealers in New York City, and 2c off t.w. price thru rest of territory.

ATLANTIC REFINING

Pittsburgh, Pa.	15	*	15	21	13
Philadelphia, Pa.	15	*	15	21	13
Allentown, Pa.	15	*	15	21	13

Above prices include these inspection fees on both gasoline and kerosene, per gallon: Alabama, 1/40c on gasoline, 1/2c kerosene; Arkansas, 1/20c on both; Florida, 1/8c on both; Georgia, 1/10c on both; Illinois, 3/100c on both; Indiana, 4/25c to 1/2c on both; Kansas, 3/50c on both; Louisiana, 1/32c on gasoline; Minnesota, 3/50c on both; Missouri, 3/10c to 1/2c on both; Nebraska, 3/100c on both; North Carolina, 1/4c on both; North Dakota, 1/20c on both; Oklahoma, 4/25c on both; South Carolina, 1/8c on both; South Dakota, 1/10c on both; Tennessee, 2/5c on gasoline and 1/2c to 4/5c on kerosene; Wisconsin, 3/50c on both. Kerosene inspection fees only, per gallon; Iowa .7/100c; Michigan 1/5c to 4/5c per gal.

Tank Wagon, Service Station Markets for Gasoline and Kerosene

Prices in Effect Mar. 31, 1930

ATLANTIC REFINING

	Gasoline Total T.W.	Tax	Gasoline T.W.	Gasoline S.S.	Oil T.W.
Erie, Pa.	15	*	15	19	13
Scranton, Pa.	15	*	15	21	13
Altoona, Pa.	15	*	15	21	13
Dover, Del.	15	3	18	20	13
Wilmington, Del.	15	3	18	20	13
Boston, Mass.	12.5	2	14.5	16.5	11.5
Springfield, Mass.	13.5	2	15.5	17.5	12.5
Worcester, Mass.	13.3	2	15.3	17.3	12.3
Fall River, Mass.	13.1	2	15.1	17.1	12.1
Providence, R. I.	12.7	2	14.7	16.7	11.7
Hartford, Conn.	13.5	2	15.5	17.5	12.5
New Haven, Conn.	13.6	2	15.6	17.6	12.6
Atlantic City, N. J.	14.5	2	16.5	18.5	13.5
Canden, N. J.	13.6	2	15.6	17.6	12.6
Trenton, N. J.	14	2	16	18	13
Annapolis, Md.	14	4	18	20	13
Baltimore, Md.	13.2	4	17.2	19.2	10.5
Hagerstown, Md.	14.7	4	18.7	20.7	13.7
Richmond, Va.	13.7	5	18.7	20.7	12.7
Wilmington, N. C.	13.4	5	18.4	20.4	12.4
Brunswick, Ga.	14	6	20	22	**15
Jacksonville, Fla.	14	6	20	22	14

Note: 2c per gal. discount off t.w. price of gasoline on sales to dealers; discount to commercial accounts under contract for one year in accordance with Code of Ethics.

*4-cent state tax is collected by retail dealer and paid by him directly to state.

**Georgia kerosene prices include 1c state tax.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline price changes)

	Oleum Spirits	V.M.&P. Naphtha	Cleaner Naphtha
Chicago	14.7	16.7	17
Detroit	17.4	18.9	20.7
Kansas City	†15.9	†17.4	†19.2
Milwaukee	16.4	*19.9	*21.7
Minneapolis	**20.7	**22.2	**24
St. Louis	15.6	17.1	18.9
New York		16	23
Boston		19	23

*Includes 2c state tax. †Includes 1c city tax.
**Includes 3c state tax.

Petroleum Spirits (Solvent)

Tank Cars (F.o.b. refinery or seaboard terminal)	
New York harbor	11.00
Philadelphia district	11.00
Providence	11.50
Tank Wagon or Steel Barrels	
New York City	18
Syracuse	18
Rochester	18
Buffalo	17–18
Providence	19
Boston	19
Bridgeport	16–18
Newark	18
Philadelphia	16
Baltimore	18

Note: 2c off above t.w. prices to large buyers in some instances.

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)

ONTARIO	Gasoline Total T.W.	Tax	Gasoline T.W.	Gasoline S.S.	Oil T.W.
Toronto	19.5	5	24.5	28	20.5
Ottawa	19.5	5	24.5	28	20.5
North Bay	22.5	5	27.5	33	27
Ft. William	22.5	5	27.5	31	22.5
Border Cities, including Windsor	18.5	5	23.5	27	19.5
MANITOBA					
Winnipeg	21.5	3	24.5	28	21.5
SASKATCHEWAN					
Regina	26	3	29	33	26
ALBERTA					
Edmonton	27.5	5	32.5	36	27.5
Calgary	23.5	5	28.5	32	23.5
BRITISH COLUMBIA					
Vancouver	23	3	26	30	24
QUEBEC					
Montreal	20.5	5	25.5	29	21.5
Quebec City	21.5	5	26.5	30	22.5
Three Rivers	21.5	5	26.5	30	22.5
NEW BRUNSWICK					
St. John	22	5	27	31	24
Moncton	22	5	27	31	24
NOVA SCOTIA					
Halifax	22	5	27	31	24
PRINCE EDWARD ISLAND					
Charlottetown	22	5	27	31	24

Note: In districts surrounding these points 1c additional is added to city price.

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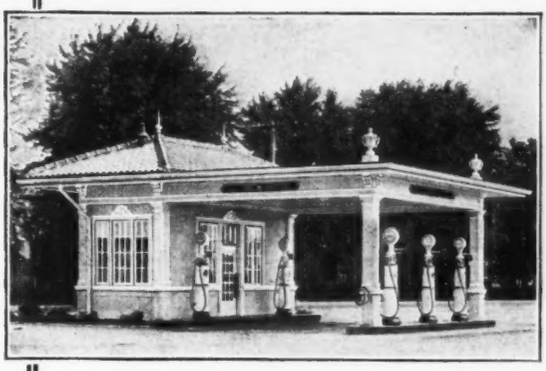

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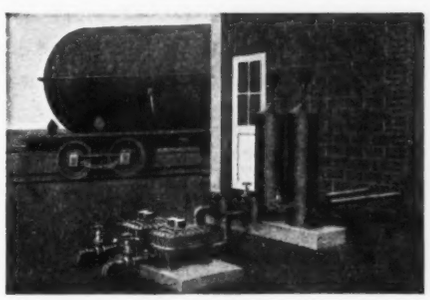

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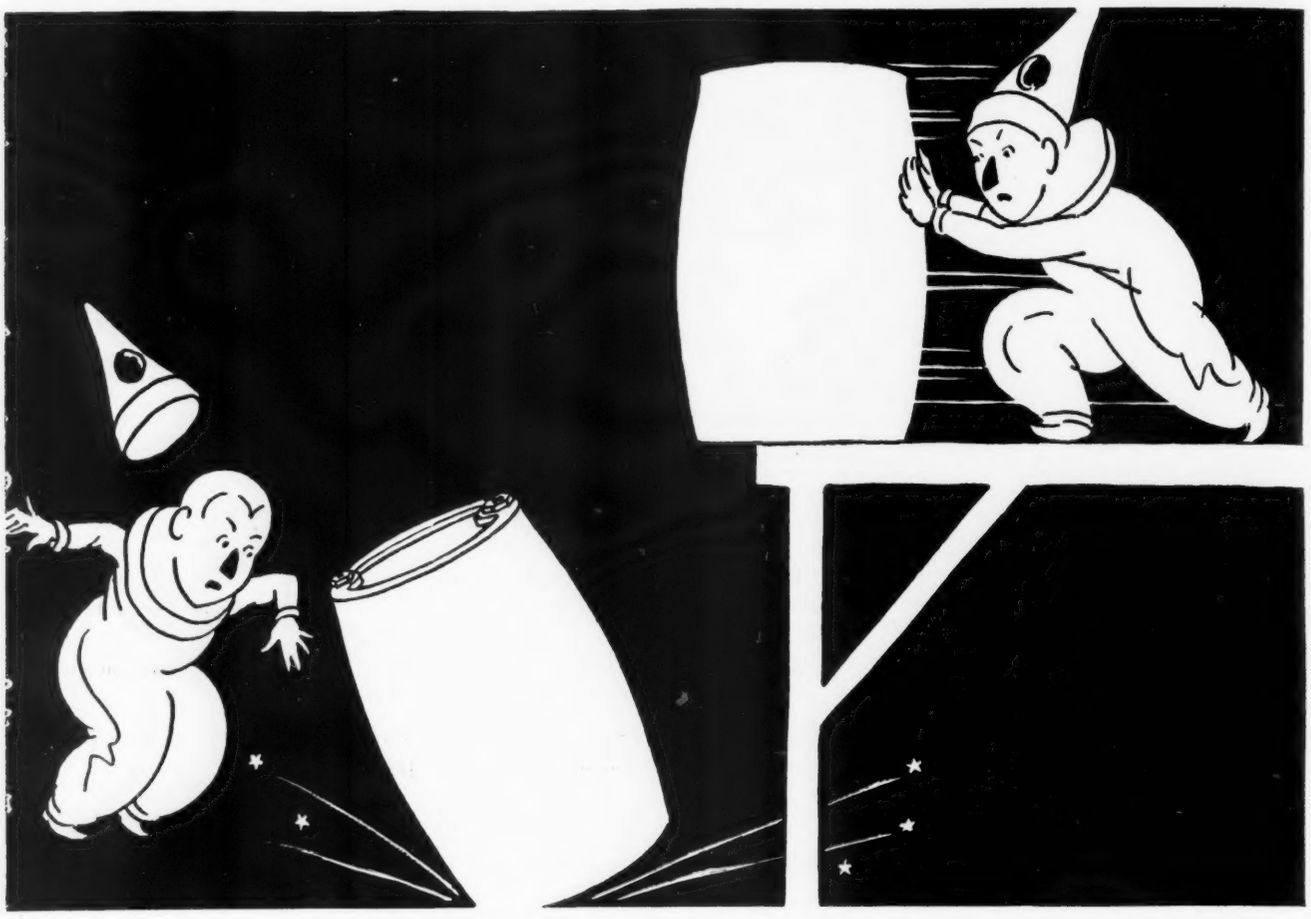

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MILWAUKEE

Crude Oil Prices (in Effect March 31, 1930)

(Crude prices for the whole year in OIL PRICE HANDBOOK published annually)

EASTERN FIELDS

(Posted by Joseph Seep Purchasing Agency)
(All Penna. Grade Crude Effective Feb. 17, 1930)

†Bradford—Alleghany district	$3.00
Bradford District Oil in New York Transit Lines (Bradford District)	††2.75
Bradford District Oil in National Transit Lines (Bradford District)	††2.75
Penna. Grade Oil in National Transit Lines (Other Pennsylvania)	*2.80
Penna. Grade Oil in Southwest Penna. Pipe Lines (Other Pennsylvania)	2.75
Penna. Grade Oil in Eureka Pipe Lines (West Virginia)	2.65
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O. district)	2.45
Wayne district crude in Cumberland lines (West Virginia)	1.24
Corning Grade in Buckeye Pipe Lines (Ohio) (Effective Feb. 17, 1930)	1.65
Corning, O., heavy grade (Effective Feb. 17, 1930)	1.55
Somerset Oil in Cumberland Pipe Lines (Kentucky) (Effective Feb. 17, 1930)	1.37
Somerset Oil in Eureka Pipe Lines (Effective Feb. 17, 1930)	1.21
Ragland Grade in Cumberland Pipe Lines (Kentucky) (Effective Jan. 29, 1929)	$0.60

*Oil run prior to July 1, 1929 is $2.75 per bbl.
†Posted by Tide Water Pipe Co., Ltd.
††Oil run prior to July 1, 1929 is $2.70 per bbl.

(Posted by Stoll Oil Refining Co.)

Oil City, Ky., oil in Stoll lines (Effective Feb. 19, 1930)	$1.45

MICHIGAN
(Posted by Dixie Oil Co.)

Traverse and Dundee (Muskegon):

32-32.9	$1.08	39-39.9	$1.29
33-33.9	1.11	40-40.9	1.32
34-34.9	1.14	41-41.9	1.35
35-35.9	1.17	42-42.9	1.38
36-36.9	1.20	43-43.9	1.41
37-37.9	1.23	44 and above	1.44
38-38.9	1.26		

(Posted by Pure Oil Co.)

Midland, Midland County	$1.25

CENTRAL STATES FIELDS
Posted by Ohio Oil Co.
Effective Feb. 15, 1930

Wooster	$1.75	Princeton	$1.60
Lima	1.65	Illinois	1.60
Waterloo	1.20	Plymouth	1.18
Indiana	1.42	West Kentucky	1.50

CANADIAN CRUDE
Posted by Imperial Oil Refineries, Ltd.

Petrolia	$2.05
Oil Springs	2.12

OKLAHOMA, KANSAS and NORTH TEXAS
Prices of Prairie Oil & Gas Co.
(In Oklahoma, Kansas, North and East Central Texas)
Effective Feb. 15, 1930

Below 25	$0.60	35-35.9	$1.17
25-25.9	0.66	36-36.9	1.20
26-26.9	0.72	37-37.9	1.23
27-27.9	0.78	38-38.9	1.26
28-28.9	0.84	39-39.9	1.29
29-29.9	0.90	40-40.9	1.32
30-30.9	0.96	41-41.9	1.35
31-31.9	1.02	42-42.9	1.38
32-32.9	1.08	43-43.9	1.41
33-33.9	1.11	44 and above	1.44
34-34.9	1.14		

Above prices were posted by Humble and The Texas Co. on Jan. 15; on Jan. 16 by Magnolia in Texas, and Jan. 17 in Oklahoma and Kansas; and on Feb. 13 by Sinclair; by Carter Oil on Jan. 16.

Humble Oil & Refining Co. Prices
(Ranger, North Texas, Mexia, Powell, Boggy Creek, Richland, Wortham, Lytton Springs, Currie, Moran and Nocona crudes all in Texas.)

Humble's prices in above fields same as Prairie's, but effective Jan. 15, 1930.

Magnolia Petroleum Co.
(In Oklahoma, Kansas and North and East Central Texas)

Magnolia posts in above fields and in Panola Co., same schedule as Prairie, which see. Its postings in Texas were effective Jan. 16, and in Oklahoma and Kansas, Jan. 17, 1930.

Jan. 16, 1930, Glasscock, Crane, Upton, Winkler, Howard and Mitchell Counties same prices as Humble's postings in Winkler, Crane, etc., which see.

Iatan district	$0.93
Corsicana heavy	0.75
Luling	0.75
Mirando	0.75
Darst Creek, 60° F. gravity	1.05

Carter Oil Co.
(Oklahoma and Kansas)

Jan. 16, 1930, same schedule as Prairie, which see.

PANHANDLE, TEXAS
Humble Oil & Refining Co.
Effective Jan. 15, 1930

Hutchinson and Carson Counties:

Below 32	$0.72	38-38.9	$0.96
32-32.9	0.78	39-39.9	0.99
33-33.9	0.81	40-40.9	1.02
34-34.9	0.84	41-41.9	1.05
35-35.9	0.87	42-42.9	1.08
36-36.9	0.90	43-43.9	1.11
37-37.9	0.93	44 and above	1.14

Wheeler County:

Below 30	$0.70	37-37.9	$1.03
30-30.9	0.76	38-38.9	1.06
31-31.9	0.82	39-39.9	1.09
32-32.9	0.88	40-40.9	1.12
33-33.9	0.91	41-41.9	1.15
34-34.9	0.94	42-42.9	1.18
35-35.9	0.97	43-43.9	1.21
36-36.9	1.00	44 and above	1.24

Gray County:

Below 29	$0.69	37-37.9	$1.08
29-29.9	0.75	38-38.9	1.11
30-30.9	0.81	39-39.9	1.14
31-31.9	0.87	40-40.9	1.17
32-32.9	0.93	41-41.9	1.20
33-33.9	0.96	42-42.9	1.23
34-34.9	0.99	43-43.9	1.26
35-35.9	1.02	44 and above	1.29
36-36.9	1.05		

Above prices met by The Texas Co. on Jan. 15, and Magnolia on Jan. 16.

WEST TEXAS
Humble Oil & Refining Co.
Effective Jan. 15, 1930

Winkler, Crane, Upton, Crockett, and Pecos Counties, also Lea County, N. Mex.

Below 25	$0.55	31-31.9	$0.76
25-25.9	0.58	32-32.9	0.79
26-26.9	0.61	33-33.9	0.82
27-27.9	0.64	34-34.9	0.85
28-28.9	0.67	35-35.9	0.88
29-29.9	0.70	36 and above	0.91
30-30.9	0.73		

Howard and Glasscock counties:
Effective Jan. 15, 1930

Below 25	$0.55	31-31.9	$0.72
25-25.9	0.58	32-32.9	0.74
26-26.9	0.61	33-33.9	0.76
27-27.9	0.64	34-34.9	0.78
28-28.9	0.66	35-35.9	0.80
29-29.9	0.68	36 and above	0.82
30-30.9	0.70		

Jan. 15, 1930, The Texas Co. posted same prices in Crane, Upton, Winkler and Lea, and Magnolia, on Jan. 16, in Crane, Upton, Winkler, Glasscock, Howard and Mitchell as Humble in Winkler, Crane etc.

SOUTHWEST TEXAS
(Posted by Humble Oil & Refining Co.)
Effective Jan. 15, 1930

Mirando	$0.75
Salt Flat	1.05
Darst Creek	1.05

NORTH LOUISIANA—ARKANSAS FIELDS
Prices of Standard Oil Co. of Louisiana

Caddo, Homer, Haynesville, Bull Bayou, El Dorado, Crichton, De Soto, Sabine and **Cotton Valley.
Effective Jan. 16, 1930

Below 28	$0.78	36-36.9	$1.20
28-28.9	0.84	37-37.9	1.23
29-29.9	0.90	38-38.9	1.26
30-30.9	0.96	39-39.9	1.29
31-31.9	1.02	40-40.9	1.32
32-32.9	1.08	41-41.9	1.35
33-33.9	1.11	42-42.9	1.38
34-34.9	1.14	43-43.9	1.41
35-35.9	1.17	44 and above	1.44

**Cotton Valley, below 36, $0.80. Beginning with 36-36.9, same schedule as above.

Smackover, below 24	$0.85
do 24 and above	1.00
Bellevue (Jan. 16, 1930)	1.05
*Urania, La. (Jan. 16, 1930)	0.85
†East El Dorado	0.75

*Posted by Louisiana Oil Refining Corp.
†Posted by Magnolia Petroleum Co.

Jan. 15, 1930, The Texas Co. same schedule in Louisiana as Standard, plus these grades: 24-24.9, $0.60; 25-25.9, $0.66; 26-26.9, $0.72; 27-27.9, $0.78.

Jan. 16, Magnolia, Louisiana Oil, and Gulf Companies met Standard schedule in Louisiana-Arkansas fields.

STEPHENS, ARKANSAS
Louisiana Oil Refining Corp., and Atlantic Oil Producing Co.
Effective Jan. 16, 1930

Below 28	$0.70	30-30.9	$0.85
28-28.9	0.75	31-31.9	0.90
29-29.9	0.80	32 and above	0.95

GULF COASTAL
Posted by Humble Oil & Refining Co.
Effective Jan. 15, 1930

Grades A	$1.05	29-29.9	$1.05
Grades B:		30-30.9	1.08
Below 25	0.90	31-31.9	1.11
25-25.9	0.93	32-32.9	1.14
26-26.9	0.96	33-33.9	1.17
27-27.9	0.99	34-34.9	1.20
28-28.9	1.02	35 and above	1.23

Fields classified as A and B are Spindletop, Goose Creek, Hull, Liberty, Sour Lake, West Columbia, Orange, Boling, Pierce Junction, Sugarland and Raccoon Bend. All other fields are Grades A only

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Crude Price Correction

In the March 19 and March 26, 1930 issues of NATIONAL PETROLEUM NEWS, the price of Osage, Wyo. crude was published at $1.45 per barrel in the crude price tables on pages 285 and 121 respectively.

That price should have been $1.53 per barrel at the well since Feb. 15, 1930, on which date that crude was cut 12 cents, from $1.65 to $1.53 per barrel, according to the Midwest Refining Co.

The price of Hogback, N. M. crude has been $1.40 per barrel at the well since Feb. 15, 1930, instead of $1.70 as published in this publication. There was a cut of 10 cents last December, and another cut of 20 cents on Feb. 15, which brought the price to $1.40. Prices are corrected in this issue.

Shaffer Makes Aviation Oils

CLEVELAND—Among oil companies making aviation petroleum products, in addition to those listed on page 150 of the March 19, 1930 issue of NATIONAL PETROLEUM NEWS, is the Shaffer Oil & Refining Co., Chicago, which on April 1 became the Deep Rock Oil Corp. That company is making both gasoline and motor oils for aviation purposes, and has spent some $75,000 for development work in this field, according to C. T. Fantozzi, assistant general sales manager at Chicago.

Another Aviation Oil Maker

Among the oil companies making petroleum products for aviation, such as were listed on page 150 of the March 19 issue of NATIONAL PETROLEUM NEWS, is the White & Bagley Co., Worcester, Mass. That company makes three grades of de-waxed Pennsylvania motor oils which it sells under the names of Aviation Oilzum Grade 77; Aviation Oilzum, Grade 98; and Aviation Oilzum, Grade 120. It also makes Oilzum rocker arm lubricant, according to E. G. Bagley, secretary.

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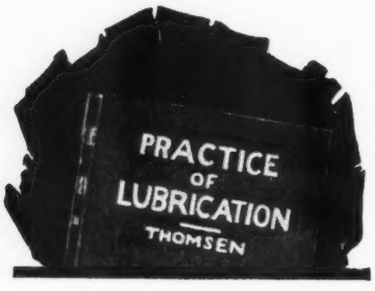

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Crude Oil Prices (in Effect March 31, 1930)

(Prices are per barrel at the well)

(Crude Oil Prices for the whole year in OIL PRICE HANDBOOK published annually)

GULF COASTAL

Prices of The Texas Co.

Effective Jan. 15, 1930

Grades A	$1.05	*Grades B	$0.90
‡Grades B (light crude)			
35–35.9	$1.23	40–40.9	$1.36
36–36.9	1.26	41–41.9	1.38
37–37.9	1.29	42–42.9	1.40
38–38.9	1.32	43–43.9	1.42
39–39.9	1.34	44 and above	1.44

*Grades B include all heavy crudes which do not meet tests for Grades A or for Gulf Coast light crude.
†The Texas Co.'s gravity and price schedule on all oil below 35° is same as Humble's postings on Grades B.

ROCKY MOUNTAIN FIELDS

Prices of Ohio Oil Co., and Midwest Refining Co.

(Salt Creek prices effective Feb. 15, 1930)

‡Salt Creek 29–29.9	$0.90
" " 30–30.9	0.96
" " 31–31.9	1.02
" " 32–32.9	1.08
" " 33–33.9	1.11
" " 34–34.9	1.14
" " 35–35.9	1.17
" " 36–36.9	1.20
" " 37 and above	1.23
Elk Basin	1.45
Grass Creek light	1.45
Big Muddy	$1.33
Lance Creek	1.53
Rock Creek	1.25
Mule Creek	1.20
Rex Lake	1.10
‡Osage	1.53
‡Cat Creek, Mont.	1.45
Sunburst, Mont.	1.65
‡Hogback, N. Mex.	1.40
Artesia, N. Mex.	1.00

‡Posted by Midwest Refining Co. Midwest also buys Grass Creek light and Elk Basin.

CALIFORNIA

Standard Oil Co. of California

(Effective March 11, 1930)

Gravity	Signal Hill Seal Beach Alamitos Heights Huntington Beach Inglewood* Olinda-Brea Canon*	Athens Rosecrans Dominguez	Elwood Terrace	Torrance Richfield	Whittier La Habra	Montebello	Coyote	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elk Hills Buena Vista Hills Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Orcutt (Santa Maria) (Union Oil Co.)	Santa Paula (Ventura) (Union Oil Co.)	Ventura Avenue (Associated Oil Co.)
14–14.9**	$0.70	....	....	$0.70	$0.70	$0.70	$0.70	....	$0.55	$0.55	$0.55	$0.55	....	$0.55	$0.70	$0.70
15–15.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	....	.55	.70	.70
16–16.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	$1.65	.55	.70	.70
17–17.9	.70	....		.70	.70	.70	.70	....	.55	.55	.55	.55	for	.55	.70	.70
18–18.9	.76	....		.76	.76	.71	.76	....	.55	.62	.62	.62	55°	.65	.75	.76
19–19.9	.82	....		.82	.82	.77	.82	....	.55	.70	.70	.70	gravity	.70	.80	.82
20–20.9	.88	....		.88	.87	.83	.87	....	....	.78	.78	.78	and	.78	.85	.88
21–21.9	.94	....		.94	.93	.90	.93	.92	....	.86	.86	.86	over	.90	.90	.91
22–22.9	1.00	....	....	1.00	.98	.97	.98	.95	....	.94	.94	.94	....	.95	.97	.94
23–23.9	1.07	....	....	1.07	....	1.05	1.04	1.01	....	1.02	1.02	1.02	....	1.02	1.05	1.00
24–24.9	1.14	1.14	....	1.14	....	1.11	1.10	1.07	....	1.09	1.07	1.07	....	1.10	1.08	1.07
25–25.9	1.21	1.19	....	1.21	....	1.17	1.16	1.13	....	1.16	1.12	1.12	....	1.18	1.13	1.14
26–26.9	1.28	1.24	....	1.28	....	1.23	1.23	1.19	....	1.23	1.17	1.17	....	1.26	1.18	1.21
27–27.9	1.35	1.29	....	1.35	....	1.29	1.30	1.25	....	1.30	1.23	1.22	....	....	1.23	1.28
28–28.9	1.42	1.34	....	1.42	....	1.35	1.37	1.31	....	1.35	1.27	....	....	....	1.28	1.35
29–29.9	1.46	1.39	....	†1.46	....	1.38	1.41	1.37	....	1.41	1.31	....	....	....	1.33	1.39
30–30.9	1.50	1.45	....	†1.50	....	1.41	1.45	1.43	....	1.47	1.35	....	....	....	1.39	1.43
31–31.9	1.55	1.51	....	....	....	....	....	1.49	....	1.53	1.39	....	....	....	1.45	1.48
32–32.9	1.60	1.57	....	....	....	....	....	1.55	....	1.59	1.43	....	....	....	1.51	1.53
33–33.9	....	1.64	....	....	....	....	....	1.60	....	1.65	1.47	....	....	....	1.58	1.59
34–34.9	....	1.71	1.32	....	....	....	....	1.65	....	††1.71	1.51	....	....	....	....	1.65
35–35.9	....	1.78	1.39	....	....	....	....	1.70	....	††1.77	1.55	....	....	....	....	1.71
36–36.9	....	1.84	1.46	....	....	....	....	1.75	....	....	....	....	....	....	....	....
37–37.9	....	1.90	1.53	....	....	....	....	1.80	....	....	....	....	....	....	....	....
38–38.9	....	1.96	1.60	....	....	....	....	1.85	....	....	....	....	....	....	....	....
39–39.9	....	2.02	1.66	....	....	....	....	1.90	....	....	....	....	....	....	....	....
40–40.9	....	2.08	1.72	....	....	....	....	....	....	....	....	....	....	....	....	....
41–41.9	....	2.14	1.78	....	....	....	....	....	....	....	....	....	....	....	....	....
42–42.9	....	2.20	1.84	....	....	....	....	....	....	....	....	....	....	....	....	....

*Inglewood prices run only to 28.9 gravity; Olinda-Brea Canon to 31.9 gravity.
†Richfield crude only. ††These two grades apply on Lost Hills only.
**Standard does not contract for crude testing below 14 gravity, but pays 45c per barrel when purchased

REFINERS' and COMPOUNDERS' SUPPLIES

Following are average market prices for materials used by refiners and compounders effective on the date shown.

Refiners' Supplies

	Mar. 31	Mar. 24
Soda Ash light 58% bags, cwt.	$1.32	$1.32
Silicate of Soda 60 deg. drums, cwt.	$1.55	$1.55
Silicate of Soda 40 deg. tank cars, cwt.	$0 60	$0.60
Silicate of Soda 40 deg. drums cwt.	$0 80	$0 80
Sal Soda wks	$1.00–1.05	$1.00–1.05
Caustic Soda 76% solid, cwt.	$2.90	$2.90
Sulfuric Acid 60 deg. tank cars, f.o.b. shipping point per ton	$11.00	$11.00
Oleum 20%, fuming sulfuric, tank cars, wks	$18 50	$18 50
Sulfur, flowers of cwt.	$3.10–4.00	$3.10–4.00
Liquid Chlorine, tank cars, wks. lb.	3.50–5.00	3.50–5.00

Compounders' Supplies

	Mar. 31	Mar. 24
Vegetable Oils		
Linseed carloads, spot lb.	13.80	13.80
Tanks, spot	13.00	13.00
Soya Bean, Tank, coast, lb.	9.00–9.50	9.00–9.50
Oleic Acid		
Distilled, tanks lb.	9.25–9.50	9.25–9.50
Distilled, bbls. lb.	10.125–10.375	10.125–10 375
Saponified, tanks lb.	9 25	9.25
Saponified, bbls. lb.	10.125–10.625	10.125–10.625
Lard Oils		
Prime Winter Strained lb.	13.25	13 25
Extra Winter Strained lb.	12.00	12 00
Extra lb.	11 50	11.50
Extra No. 1 lb.	11 00	11 00
No. 1 lb.	10 50	10 50
No. 2 lb.	10 25	10.25
Tallow oil lb.	10.00	10.00
Neatsfoot Oil		
Pure, bbls lb.	13.00	13.00
Extra, bbls lb.	11.25	11 25
No. 1 bbls lb.	11.00	11 00
Cold Pressed lb.	17.50	17.50
Fish Oils		
Menhaden Oil		
Light Pressed gal.	63–65	63–65
Light Pressed, tank cars, N. Y. gal.	53	53
White bleached gal.	67	67
Yellow bleached gal.	61	61
Whale, extra winter bleached, gal.	85	85
Naval Stores		
Steam, distilled turpentine, N. Y. gal.	51	51
Steam distilled turpentine, Savannah gal.	45	45
Gum turpentine, N. Y. gal.	56.50	56.50
Gum turpentine, f.o.b. cars Savannah gal.	53	53
Wood Rosin, N.Y. gal.	$7 30	$7 30
Wood Rosin F, Savn'h bbl.	$6.50	$6 50
Gum Rosin B, N. Y. bbl.	$7.60	$7.60
Gum Rosin B, f.o.b. cars Savannah bbl.	$6.50	$6.50
Rosin oil, pure gal.	58	58
Rosin oil, compounded gal.	58	58
Pine Tar		
Kiln burnt bbl.	$13.00–14.00	$13.00–14.00
Retort bbl.	$13.50–14.50	$13.50–14.50
Alcohol		
Denatured Formula 5, in bbls., per gal.	51–55	54–57

The richness of faience tile of blue, black and red on the eaves and pillar caps of this service station of the Humble Oil & Refining Co. shows up well against the buff stucco of the building. This is one of the company's more elaborate types, and includes greasing, car washing and tire and battery service

Humble Builds Stations to 22 Types

TWENTY-TWO different types of service stations, all built around the same theme but each one with individual characteristics are being put up by the Humble Oil & Refining Co. in Texas.

The shape of the lot and the vicinity in which the station is to be erected determine the design and architecture in each particular case. An effort is made to keep them similar without sacrificing individuality.

For instance, the "A" and "B" series stations the company is putting up are semi-octagon shaped, while the "D" series is rectangular.

Roofs are of hot rolled or soft copper of 16 ounce weight. The exterior walls are of hard burned common brick, stuccoed with a special Humble buff stucco. Bases of the buildings and bases of the columns supporting the canopies are blue hard-baked tile, while the eave line of the station, the pilaster and column caps are ornamented with faience blue, black and red ornamental tile. Humble Oil trade mark plaques of faience tile are placed over the doors of the station.

The interior walls of the "A" and "B" types are of brown paving bricks, while the floors are finished in dark green floor hardener in order to create an attractive floor and also one easy to keep clean.

Ceilings are either Celotex, paneled with Celotex strips, or plaster to match the stucco of the station exterior.

The interiors of the D series stations are finished with Portland cement plaster and common brick and the finish plaster is painted instead of paving brick being used.

Its other types of stations follow the general scheme of either the "A", "B" or "D" series. "C" series stations differ from type "D" in that they are built of wood, painted on the outside and covered with painted sheetrock.

The copper roof effect is obtained by using galvanized iron painted bronze, while the ornamental tile effect is achieved by painting.

One type is a frame station and another type uses an overhanging canopy all around the station. The latter type station is particularly adaptable for triangular shaped lots.

All stations are equipped with grease racks and there are car washing facilities at practically all stations.

Most of the stations offer some sort of tire service, many offer battery service, and generally, most of them are equipped to service a car completely with the exception of repair work and overhauling of the motor.

There are floodlights and street lights that furnish the lighting for the exterior and grounds.

H. D. Lill, vice president of the Chambers Agency, Inc., Houston handling the Humble account says these stations cost a little more than the average service station. More money is being spent on the stations erected in the semi-residential sections of the larger cities or centrally located stations in smaller towns. The general architectural tone is Moorish with just enough Spanish influence to give life and color to practical simplicity, Mr. Lill says. The stations fit in with the general atmosphere of the southwest.

Gasoline pumps and motor oil "lubsters" are so placed that several cars can be serviced at one time.

In an effort to insure the customer of a thorough greasing or washing job, the station manager checks over every car after they leave the racks.

How Code Questions May be Submitted

NEW YORK, March 28.—Paul E. Hadlick, secretary of the national committee on interpretation of the code, has prescribed the procedure in submitting questions to the committee which state code committees are asked to follow.

Letters stating only one question in each letter with the facts pertaining to the question, should be addressed to W. R. Boyd, Jr., at the American Petroleum Institute headquarters at 250 Park avenue, New York, and also to the other members of the committee: H. T. Klein, The Texas Co., 17 Battery place, New York. chairman; E. S. Hall. Standard Oil Co. of New Jersey, 26 Broadway, New York; R. B. Jones, Panhandle Producing & Refining Co., Wichita Falls, Texas, and H. D. Collier, Standard Oil Co. of California, San Francisco.

"When a member of the national committee finds it inconvenient to attend a meeting he can at least write his opinion for the consideration of the others present," Mr. Hadlick has written state committees.

Mr. Hadlick urged that questions under the code should first be taken up with state committees in an effort to relieve the national committee of many minor questions. Copies of meetings of state committees were requested of state chairmen.

PITTSBURGH, Pa.—The Pittsburgh office of the Johnson Oil Refining Co., Chicago, has moved to 209 Investment Bldg. here, on March 28. offices formerly were in the Union Trust Bldg.

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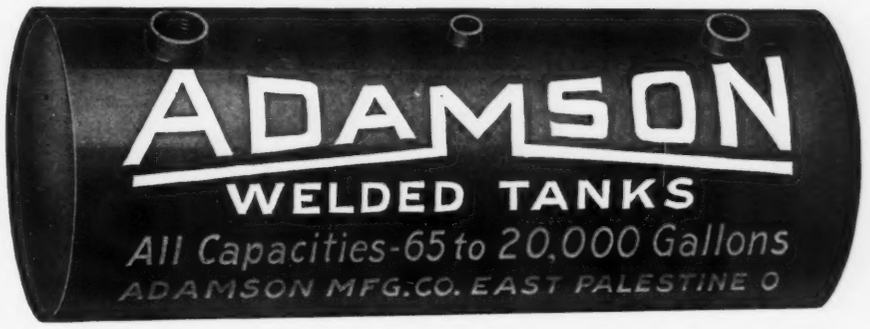

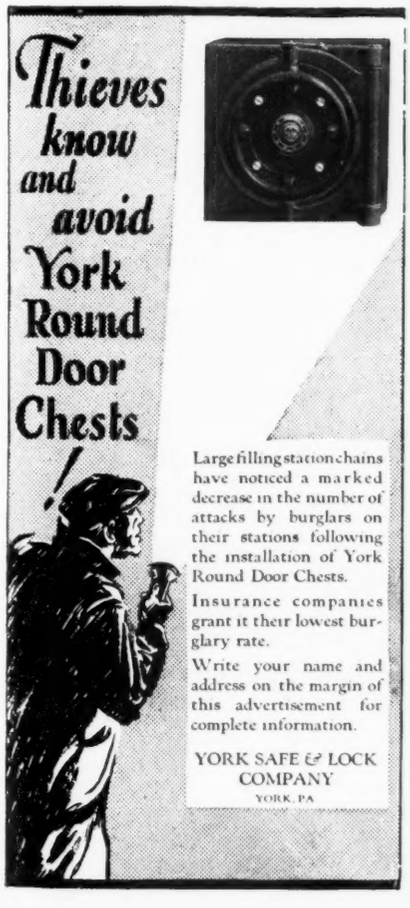
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Gulf Refining Company

General Sales Offices
PITTSBURGH, PA.

District Sales Offices
New York, Boston, Philadelphia, Louisville, Atlanta, Houston, New Orleans

Transactions in Oil Shares on New York Stock Exchange

1928 High	1928 Low	1929 High	1929 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions Week Ended Mar. 29 Sales	First	High	Low	Last	Change
43⅞	27⅜	42⅝	17½	(sh) 992,075	N.P.	Amerada Corp.	50cQ	Jan. 31, 30	61,000	23⅜	29¾	23⅜	29	+ 5¾
85	51¼	64¾	12½	(sh) 209,180	N.P.	American Republics Corp.	....	.....	22,700	32	37	32	34⅞	+ 3¾
53⅜	37½	47¼	32½	$56,000,000	$25	Associated Oil	50cQ	Dec. 31, 29	90	43	44	43	44	+ 2
62½	50	77⅞	30	50,000,000	25	Atlantic Refining	‡25cQ	Dec. 16, 29	57,400	48	49¼	47½	47¾	+ ¼
53	20	49⅛	20	47,261,125	25	Barnsdall Corp. A	50cQ	Feb. 7, 30	274,000	28	34	28	31⅞	+ 3⅞
51⅜	20	49	38⅛	300,525	25	do B	50cQ	Feb. 7, 30	.....	....	....	....	....	....
24½	12¼	32⅞	13	(sh) 956,075	N.P.	Beacon Oil	....	.....	4,300	15	16	15	16½	+ ½
36	25¼	34½	25	$51,524,150	$25	California Petroleum	....	Jan. 1, 29	.....	....	....	....	....	....
....	....	37¾	18	(sh) 4,634,163	N.P.	Continental Oil (Delaware)	....	.....	36,800	26⅜	27½	26¼	26⅞	+ ⅜
94⅜	68	94¾	42¼	21,031,400	100	General Asphalt	$1Q	Dec. 16, 29	74,600	65¼	70⅜	65½	66¾	+ 1¾
141	110⅛	138	103½	6,628,200	100	do pfd	$1.25Q	Dec. 2, 29	.....	....	....	....	....	....
67	79	109	23	25,000,000	100	Houston Oil	....	.....	103,300	91¾	110	91¾	103¼	+11¾
38⅜	21¾	39¼	17¾	(sh) 1,333,157	N.P.	Independent Oil & Gas	50cQ	Jan. 31, 30	44,000	27¼	29½	26⅞	29⅛	+ 2⅛
39⅜	9	53	13	$4,299,190	$10	Indian Refining	....	Dec. 15, 20	217,700	26	27¼	23⅛	24	— 2⅝
37¼	8½	51¼	11⅛	4,550,110	10	do ctfs	....	.....	91,400	26½	26½	20¾	22½	— 4⅜
185	140	165	160	1,977,700	100	do pfd. new	$1.75Q	Jan. 1, 30	.....	....	....	....	....	....
39⅛	27⅜	38⅜	16⅛	3,992,387	N.P.	Lago Oil & Transport	....	May 2, 27	1,600	25	25⅛	25¾	24	— 1½
119¾	9⅜	18	7	(sh) 1,187,298	N.P.	Louisiana Oil Refining	....	.....	9,600	10¼	10¾	9⅞	9⅞	— ⅛
96	78	100¼	80	$4,000,000	$100	do pfd	$1.62½	Feb. 15, 30	.....	....	....	....	....	....
25½	12½	18½	5⅛	(sh) 330,000	N.P.	Maracaibo Oil	....	.....	600	9⅜	9⅜	9	9⅛	— ⅝
360	250	295	176	$45,942,800	$100	Mexican Petroleum	$3Q	Jan. 20, 30	.....	....	....	....	....	....
....	....	....	....	12,000,000	100	do pfd	$2Q	Jan. 20, 30	.....	....	....	....	....	....
73	4⅝	69¾	9¼	(sh) 995,500	N.P.	Mexican Seaboard	....	Nov. 15, 24	192,500	34½	35⅝	30⅞	31¼	— 3½
44½	25⅛	39⅞	22⅜	(sh) 1,857,461	N P.	Mid-Continent	50cQ	Feb. 15, 30	41,600	31	32⅜	30¾	31¼	+ ⅝
120½	103¼	121	120¼	$6,718,000	$100	do pfd	$1.75Q	Dec. 1, 29	.....	....	....	....	....	....
7⅜	2⅜	5⅛	⅜	23,849,720	10	Middle States	....	July 1, 23	.....	....	....	....	....	....
5⅞	1½	3⅝	⅛	5,950,500	10	do ctfs	....	.....	4,800	1¾	1⅞	1⅝	1¾	— ⅛
2¼	1	1½	⅝	(sh) 3,500,000	N.P.	Pacific Oil	....	.....	6,800	1⅛	1⅛	1⅛	1⅛	0
55½	38¼	69	40¼	$50,000,000	$50	Pan American P & T	....	Oct. 20, 27	100	55	55	55	55	+ ½
58⅞	37¾	69¼	40½	121,101,400	50	do B	....	Oct. 20. 27	1,900	55½	55½	54⅝	54⅝	— ⅜
28⅜	15½	17½	13½	(sh) 400,000	N.P.	Pan. American Western B	....	Jan. 30, 27	.....	....	....	....	....	....
21¾	11½	15¼	3	199,370	N.P.	Panhandle P. & R	....	.....	6,700	8½	8⅞	7	7	— 1⅜
106¼	70	76	47½	$2,935,200	$100	do pfd	....	July 2, 23	100	51½	51½	51½	51½	+ 1⅜
53⅞	35¼	47	24¼	(sh) 2,406,803	N.P.	Phillips Petroleum	‡50cQ	Jan. 2, 30	44,400	38⅜	39	38	38⅛	+ ¼
5¼	½	3⅜	1	$29,622,925	$25	Pierce Oil Corp	....	.....	9,000	2¼	2¼	2	2⅛	0
50	16¼	51½	20	15,000,000	100	do pfd	....	Feb. 1, 22	1,200	36¼	37¼	34	34	— 2¾
6⅝	3½	5⅞	½	(sh) 2,500,000	N.P.	Pierce Petroleum	....	.....	59,400	5⅞	6	5½	5½	— ½
64⅝	59½	65⅝	40½	$60,636,450	$25	Prairie Oil & Gas	‡50cQ	Dec. 31, 29	4,800	48⅞	49½	48	48¾	— ⅛
....	....	65	45	101,250,000	25	Prairie Pipe Line	‡75cQ	Dec. 31, 29	4,400	55⅝	56	55¼	55⅜	+ ⅜
29¾	16	25⅞	4	37,450,850	50	Producers & Refiners	....	Sept. 15, 23	4,900	11⅜	11⅜	10⅝	10⅝	— ⅜
49⅝	41	46¾	25½	2,845,350	50	do pfd	....	May 1, 25	80	38	38	35	35	— 3
31¼	19	30¾	20	75,959,255	25	Pure Oil Co	37½cQ	Dec. 16, 29	32,000	24¼	25	24¼	24¾	+ ⅝
119	108	116	108	13,000,000	100	do 8% pfd	$2Q	Jan. 2, 30	390	113½	113¾	113⅜	113¾	+ ⅜
56	23½	49⅝	20	47,127,725	25	Richfield Oil	50cQ	Feb. 15, 30	31,000	26⅞	27½	26	26¼	— ½
....	....	42½	15	(sh) 1,200,000	N.P.	Rio Grande Oil Co	50cQ	Jan. 25, 30	23,400	23½	23⅞	22⅝	23½	+ ⅜
64	44⅝	64	43⅛	(sh) 546,646	$13.40	Royal Dutch N. Y. shares	$1.3415	Feb. 5, 30	27,700	51¾	53½	51⅜	52⅞	+ 1⅛
57½	39⅜	55⅛	22⅝	(sh) 65,203,000	£2	Shell Transport & T	97c	Jan. 28, 30	440	45	45½	45	45½	+ 1½
39¾	23¼	31⅞	19	12,254,979	N.P.	Shell Union Oil	35cQ	Dec. 31, 29	22,800	23¼	24	23	23⅛	+ ¼
27¼	18⅛	40⅛	15	$8,357,280	$10	Simms Petroleum	40cQ	Feb. 28, 30	121,900	35	37	33½	34	— 1¼
46¾	17⅜	45	21	5,494,095	N.P.	Sinclair Consolidated	50cQ	Jan. 15, 30	87,400	27½	28¼	27¼	27⅞	+ ¼
110	102½	111	103	$16,025,200	$100	do pfd	$2Q	Feb. 15, 30	700	110¼	111⅞	110¼	111⅞	+ 1½
42⅜	25	46½	28	27,396,590	25	Skelly Oil Co	50cQ	Dec. 16, 29	13,700	35½	35⅞	34⅝	34⅞	— ⅜
80	53	81⅞	51½	(sh) 13,016,435	N.P.	S. O. California	‡62½cQ	Dec. 16, 29	35,900	63⅝	67	63½	65¼	+ 1¼
59¾	37¾	83	48	$612,095,850	$25	S. O. New Jersey	‡25cQ	Dec. 16, 29	489,400	69	75	68¾	73½	+ 4¾
45½	28¾	48⅛	31¼	434,094,575	25	S. O. New York	40cQ	Dec. 16, 29	67,100	34¼	35⅞	34¼	35⅛	+ ⅞
77	31½	84¾	53	(sh) 1,297,847	N.P.	Sun Oil	‡25cQ	Dec. 16, 29	400	65	65	64⅛	65	+ 1
110	110	105½	100	$5,000,000	$100	do pfd	$1.50Q	Dec. 2, 29	330	103¼	104	103¼	103½	+ ¼
14¼	2½	24	5¼	(sh) 1,304,698	N.P.	Superior Oil Corp	....	Dec. 20, 20	7,600	7¾	8	7⅞	7⅛	— ¾
74¾	50	71⅞	50	$211,082,925	$25	The Texas Corp	75cQ	Jan. 1, 30	42,500	57½	58¾	57	57⅞	+ ⅝
26⅝	12⅛	23⅞	9	8,380,340	10	Texas Pacific Coal & Oil	2½%	Dec. 31, 29	12,000	13¼	13¼	12⅜	12⅞	— ⅛
41½	19⅝	40	14	(sh) 2,179,275	N.P.	Tide Water Oil Co	20cQ	Dec. 31, 29	1,000	23⅝	26	23⅜	26	+ 3
100⅛	86¾	97½	85⅛	$20,321,000	$100	do 5½% pfd	$1.25Q	Feb. 15, 30	400	91¾	91¾	90	90⅛	+ 1⅛
25	14⅜	23½	10	(sh) 4,877,976	N.P.	Tide Water Associated	30cQ	Feb. 15, 30	46,200	14⅞	15½	14¾	15	+ ½
91⅜	81⅞	90⅞	74½	$72,989,200	$100	do pfd	$1.50Q	Jan. 2, 30	3,800	83	89¾	82⅜	88	+ 5⅛
14½	6¾	15¼	5⅛	(sh) 3,842,029	N.P.	Transcontinental Oil	....	.....	46,000	9¼	10¼	9¼	10⅛	+ ¾
58	42¾	54½	41⅛	$40,858,375	$25	Union Oil of California	‡50cQ	Feb. 10, 30	7,200	46⅜	46⅞	45½	45½	+ ⅛
128⅛	110	163¾	33	31,101,200	100	Union Tank Car Co	$1.25Q	Dec. 2, 29	1,600	34⅞	35	34½	35	0
44⅞	26	42⅞	15	(sh) 488,359	N.P.	Warner Quinlan	50cQ	Jan. 2, 30	10,200	18½	19⅜	18	18½	— ¼
38	20⅛	38	25	(sh) 490,000	N.P.	White Eagle Oil & Refining	50cQ	Jan. 20, 30	.....	....	....	....	....	....
22⅛	17¼	29¾	11½	(sh) 428,967	N.P.	Wilcox Oil & Gas	....	May 10, 28	1,100	17½	18	17	17	— ½

*New High †New Low xEx-Dividends ‡Also Extras s-Stock Total Sales 2,515,930

Oil Dividends

	Amount	Payable	Stock of Record
Barnsdall Corp. A & B	q. 50c	May 7	Apr. 7
Buckeye Pipe Line	q. $1	June 14	Apr. 28
Petroleum Corp.	q. 37½c	Mar. 31	Mar. 25
Rio Grande Oil	q. 50c	Apr. 25	Apr. 10

Late Income Reports

	1929	1928
North Central Texas Oil Co.	$278,637	$227,466
Paragon Refining Co.	365,817	654,672

Houston Gets Headquarters

HOUSTON, March 29.—Cranfill Reynolds Oil Corp., of Delaware, recently formed to consolidate Moody-Seagraves oil producing interests in the Gulf Coast with the Cody Petroleum Co., the Central Texas Refining Co., and the earlier Cranfill & Reynolds, Inc., will move its headquarters to Houston immediately. Cranfill-Reynolds headquarters have been at Dallas.

Sinclair to Expand, Not Sell Market Outlets

CLEVELAND, March 29.—Harry F. Sinclair, chairman of the board, Sinclair Consolidated Oil Corp., has issued a denial in New York to rumors that one of the Standard Oil companies would buy Sinclair's marketing outlets. Mr. Sinclair said:

"Our marketing facilities are vital, and are not for sale. Rather than reduce them, we contemplate their expansion. The report is not only untrue, but it is utterly ridiculous."

LOUISVILLE, Ky.—Consolidation of the companies operating as the Reed, Midwest and National Air Filter Companies, was effected April 1. They will thereafter operate as one organization under the name of the American Air Filter Co., Inc., according to N. T. Nealy, advertising manager. Headquarters are at Louisville.

Pittsburgh Stock Exchange

Transactions week ended March 28, 1930

	Sales	High	Low	Last	Change
Ark. Nat. Gas	2,480	16⅜	15	16	+1½
do pfd	563	7⅞	7⅞	7⅞	0
Devonian Oil	210	10½	10	10	0
Dixie & Util. pfd.	200	90	87	87	—2
Leonard Oil	6,850	3⅝	3¼	3½	0
Lone Star Gas	26,961	46	41	44¼	+3
do pfd	202	109½	106½	109	+3
Phoenix Oil	3,900	.40	.40	.40	+.10
Plymouth Oil	460	25⅛	24½	25	+ ½
Pgh. Oil & Gas	50	3	3	3	0
Shamrock Oil & Gas	5,580	23	21	22	— ½
Shamrock O. & G. 6s	$10,000	99	96½	99	0

Pittsburgh Curb Market

Transactions week ended March 28, 1930

	Sales	High	Low	Last	Change
Arkansas Gas A.	287	15	15	15	+ ⅝
Gulf Oil	1,700	154	150½	154	+4

Financial Notes

Sunray Oil Corp.—Approximately 95 per cent of Stock of Homaokla Oil Co. has been acquired through an exchange of stock on a basis of one share of Sunray for 2½ shares of Homaokla.

Sun Oil Increases Capital

PHILADELPHIA, March 27.—Stockholders of Sun Oil Co. have authorized an increase in the capital stock of 300,000 no par shares to 1,800,000 no par shares. The increase is to provide for the payment of common stock dividends like those paid in recent years. Last year the company paid 9 per cent in stock in addition to cash dividends. At the annual meeting all directors were re-elected.

Beacon Adds Colonial To Company Name

CLEVELAND, March 29.—Name of Beacon Oil Co. was changed to Beacon Colonial Oil Co. at the annual meeting of the company in Boston March 25. The change was made to tie the name of the company more closely to its retail marketing outlets which are known as the Colonial service stations.

Beacon is the operating subsidiary of the Standard Oil Co. of New Jersey in New York and New England.

Retiring directors and officers were re-elected at the meeting R. B. Kahle is president.

Phillips Buys Two Gasoline Plants

CLEVELAND, March 27.—Phillips Petroleum Co. has purchased two natural gasoline plants in the Burbank field which are to be dismantled. Gas will be tied in to existing Phillips plants to increase production.

Plants purchased are those of the Mid-Kansas Oil & Gas Co. and the Romarti Gasoline Co. The Romarti was owned by the Shell Petroleum Corp., Continental Oil Co. and the Tidal Oil Co.

Tide Water Cuts Veedol Price at Retail

CLEVELAND, March 29.—Tide Water Oil Sales Corp. has reduced the price of Veedol motor oils to 25 cents a quart in crankcase lots in the east. Single quarts remain at 30 cents.

Announcement of the price reduction from 30 cents was made in a seven-column advertisement in New York newspapers with the statement that it is the same oil that was used on the Graf Zeppelin and by the Byrd South Pole expedition.

Motorists are told in the advertisement they can save 25 cents to $1 on each refill of oil but are urged to drain and refill their cars' crankcases more frequently.

Aviation Gasoline Contracts Let

CLEVELAND, March 24.—Phillips Petroleum Co. has contracted to supply the Universal Aviation Corp., with gasoline for its passenger and mail planes in 1930. Requirements are estimated at 5000 gallons daily. Phillips' "77" will be used. Richfield Oil Co. of California will begin deliveries the middle of May on a five-year contract to supply the West Coast Air Transport Corp. with motor fuel.

N. P. N. Ownership Statement

Statement of the ownership, management circulation, etc., required by the Act of Congress of August 24, 1912, of National Petroleum News, published weekly at Cleveland, Ohio, for April 1, 1930, State of Ohio, County of Cuyahoga.

Before me, a notary public in and for the State and County aforesaid, personally appeared A. W. Brobst, who, having been duly sworn according to law, deposes and says that he is the secretary of The National Petroleum Publishing Company and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, The National Petroleum Publishing Company, Cleveland, Ohio; editor, Warren C. Platt, Cleveland, Ohio; managing editor, V. B. Guthrie, Cleveland, Ohio; and business managers are: None.

2. That the owners are: Warren C. Platt, Cleveland, Ohio; Bess H. Platt, Cleveland, Ohio; V. B. Guthrie, Cleveland, Ohio; A. W. Brobst, Cleveland, Ohio; W. H. Little, Tulsa, Okla.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages, other securities are None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holders appears upon the books of the company as trustees or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiants' full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

(Signed) A. W. BROBST, Secretary.

Sworn to and subscribed before me this 27th day of March, 1930.

(Signed) H. L. RICHEY, Notary Public.

(My commission expires 5-7-30.)

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Miscellaneous

Advertisers having box numbers should be addressed in care of National Petroleum News, 1213 West 3rd Street, Cleveland, Ohio, unless otherwise specified.

Standard Oil Stocks on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Outstanding Capital	Par Value	Stocks	Div Rate	Last Paid	Transactions Week Ended Mar. 29 Sales	First	High	Low	Last	Change
22⅜	14⅞	18¾	14¼	£4,126,460	£ 1	Anglo-American Oil	36c	June 5, 29						
21¼	15	18	12¼	.....	....	do certificates	36c	June 5, 29	900	12¼	15	†12¼	15	+ 1
20½	14⅜	17	11	.....	£ 1	do ctfs. non-voting	36c	June 5, 29	100	12	12	12	12	— 3½
5	1¼	2½	½	(sh) 500,000	N.P.	Atlantic Lobos	.....	.....	200	1	1	1	1	+ ¼
9¾	3¼	4⅛	1	$10,000,000	$50	do pfd	.....	.....	200	1¾	1¾	1¾	1¾	+ ⅜
56	44½	46½	23¼	$1,000,000	25	Borne-Scrymser	$1 S.A.	Oct. 15, 29						
76	58	74¼	55	10,000,000	50	Buckeye Pipe Line	‡$1Q	Dec. 14, 29	400	62	62	61⅞	61⅞	— 1⅞
161	117¼	210	130	3,000,000	25	Chesebrough Mfg	‡$1Q	Dec. 30, 29						
23	16	29	8⅛	36,123,350	10	Continental Oil	.....	Dec. 15, 27	2,500	15⅝	16⅛	15⅝	16⅛	+ ¼
17½	9½	11¾	5⅝	.....	N.P.	Creole Petroleum	.....	.....	5,500	6⅞	6⅞	6⅝	6¾	— ⅛
82	67	95	40	1,500,000	50	Cumberland Pipe Line	$1Q	Dec. 16, 29						
88	64⅛	70½	42	5,000,000	100	Eureka Pipe Line	$1Q	Feb. 1, 30	50	44	44	44	44	— 1
13	4¼	7	3	16,000,000	100	Galena Signal Oil	.....	June 30, 25						
86	26	90	73½	4,000,000	100	do new pfd	.....	June 30, 26						
89¾	35	88	71½	2,000,000	100	do old pfd	.....	June 30, 26	40	76⅜	76⅜	76⅜	76⅜	0
114¾	59¼	128	74¼	73,685,700	25	Humble Oil & Refining	50cQ	Jan. 1, 30	38,500	109	116⅞	107⅛	111	— 7¾
290½	176½	340½	260	20,000,000	100	Illinois Pipe Line	$10S.A.	Dec. 16, 29	50	305¼	305¼	305¼	305¼	+ 1¼
104	56¾	41	22	(sh) 26,421,768	N.P.	Imperial of Canada	12½cQ	Dec. 2, 29	10,100	26¾	28	26½	26½	— ⅛
91⅞	74⅜	41⅞	26	$1,000,000	$10	Indiana Pipe Line	‡50cQ	Feb. 15, 30	1,200	37⅞	38½	38	38½	+ ⅜
55	35	37½	15	(sh) 14,247,088	N.P.	International Petroleum	12½c	June 25, 29	16,800	22	23	21¾	22	+ ⅛
32⅜	19⅜	25⅞	10½	$6,363,350	12.50	National Transit Co	‡25cQ	Dec. 16, 29	900	20½	20⅝	20¼	20⅝	0
75	38½	85	72	1,000,000	10	New York Transit	‡40cQ	Jan. 15, 30						
....	....	....	....	.....	....	do new	.....	.....						
69	56½	63	41	2,000,000	50	Northern Pipe Line	$2 S.A.	Jan. 2, 30						
83½	58½	79⅞	64⅛	60,000,000	25	Ohio Oil Co	‡50cQ	Dec. 14, 29	1,400	72¼	73⅞	72	73⅞	+ 1⅝
84	28	44½	18⅝	10,000,000	25	Penn Mex. Fuel	$1	Dec. 14, 29	400	21	21	20⅛	20⅞	+ ¾
220	167	50	26	4,000,000	25	Solar Refining	$1.25 S.A.	Dec. 20, 29						
19	12	23½	13	1,000,000	10	Southern Pipe Line	$10	Dec. 31, 29						
71⅞	36¾	60¼	35⅛	30,000,000	25	South Penn Oil	‡50cQ	Dec. 30, 29	11,900	43⅜	45⅞	43¼	44⅜	+ 1⅛
102	70	70	45	1,750,000	50	South West Pa. Pipe Lines	$1	Dec. 31, 29						
95⅞	70⅞	63	45	348,175,069	25	S. O. Indiana	‡62½cQ	Dec. 16, 29	48,200	55⅛	57½	55	56⅛	+ ⅞
27¾	15	40	18	8,000,000	25	S. O. Kansas	‡50cQ	Dec. 16, 29	38,600	36½	*40	36	39¼	+ 3¼
49	44	46⅜	29	25,654,516	10	S. O. Kentucky	‡40cQ	Dec. 31, 29	4,100	36⅞	37	35⅝	36	— ⅜
54⅝	39⅞	50¼	40	4,649,225	25	S. O. Nebraska	‡62½cQ	Dec. 20, 29	400	48½	48½	47½	47½	— 1⅜
34	71	129	60	14,000,000	25	S. O. Ohio	62½cQ	Jan. 2, 30	3,200	103¾	108½	96	96¾	— 7½
25	116	125½	106	7,000,000	100	do pfd	$1.75Q	Dec. 2, 29	20	121	121	121	121	0
23½	16	18	5⅛	861,466	25	Swan Finch	30c	Jan. 15, 29						
111	72	133¾	75	126,154,000	25	Vacuum Oil	‡$1Q	Dec. 20, 29	5,600	93¾	94	92	93	+ 1

*New High †New Low ‡Also Extras.

Independent Oils on New York Curb

1928 High	1928 Low	1929 High	1929 Low	Par Value	Stocks	Transactions Sales	Week Ended Mar. 29 First	High	Low	Last	Change
1½	.53	.72	.125	$5	Amer. Cons. Oilfields	28,900	5/16	3/8	3/16	1/4	— 1/16
9½	3⅛	8⅝	1⅛	N.P.	Amer. Maracaibo	2,400	2⅛	2⅜	2⅛	2⅛	+ ⅛
4½	2¼	4¾	1	$10	Argo Oil						
3¾	3⅜	26	3¾	N.P.	Arkansas Nat. Gas	12,600	15⅛	16¼	14⅞	15⅞	+ ⅞
....	....	24¾	6½	N.P.	do A	54,600	13⅞	15½	13⅞	15½	+ 1½
....	....	9	4	10	do pfd	100	7⅞	7⅞	7⅞	7⅞	0
55	32¾	70	50	N.P.	British American Oil						
23⅞	3¾	4⅞	⅞	25c	Carib Syndicate	1,000	1¾	1⅞	1¾	1¾	— ⅛
....	....	68½	20	N.P.	Cities Service new	278,500	38½	41¾	38⅛	41¾	+ 3
103½	94½	99¼	84	100	do pfd	800	92½	93⅜	92⅜	93⅜	+ ⅞
9⅝	8⅞	9¼	8	10	do pref. B	100	8⅜	8⅜	8⅜	8⅜	+ 1/16
97	88½	96	81	100	do pref. BB	100	84	84	84	84	+ 2½
2¼	1	1½	¼	1	Colombia Syndicate	8,400	1/16	3/8	5/16	3/8	+ 1/16
17¾	9¾	15	3⅞	N.P.	Colon Oil	9,300	7	8	7	7⅞	+ ¼
8⅞	6¼	11⅛	2½	10	Consolidated Royalty	100	4½	4½	4½	4½	+ ⅜
....	....	135	42	N.P.	Cosden Oil Co	200	54¾	54¾	50	50	— 4¾
....	....	82	55	....	do pfd						
3¼	.76	2½	¼	N.P.	Crown Central	400	⅞	⅞	¾	¾	+ ⅛
15	6¾	11¾	4	N.P.	Crystal Oil						
50	48	51⅛	51⅛	$100	do pfd						
33½	8⅛	26	6½	N.P.	Darby Petroleum	4,900	10⅜	10⅝	9⅜	9⅞	— ⅞
2⅞	1	11	2	N.P.	Derby Oil & Refining	4,200	5½	7	5¼	7	+ 1¼
21⅛	7½	44	5	N.P.	do pfd						
165	101½	209	115	$25	Gulf Oil Corp	8,800	150	154¾	149	152½	+ 4½
7½	5⅝	7½	1⅜	5	Homaokla Oil						
....	....	50	5	$1	Indian Territory	43,800	42⅞	*50	42⅝	50	+ 7⅞
3⅜	1	2⅞	⅜	10	Intercontinental Pet.	89,200	1	1¾	1	1½	+ ½
3	¼	3⅜	1¼	N.P.	Kirby Petroleum	9,400	2½	3	2½	3	+ ½
9⅜	5½	6⅜	1	N.P.	Leonard Oil & Dev	5,800	3½	3¾	3⅛	3½	— ⅛
43⅜	20	38⅞	18	N.P.	Lion Oil & Refg	800	24½	24⅞	24	24	0
....	....	67⅞	28	N.P.	Lone Star Gas	8,800	42¾	45⅞	41	43⅝	+ 2⅝
1⅞	.50	1¼	¼	1	Magdalena Syndicate	800	1/16	3/8	1/16	3/8	0
48½	32	38½	15	N.P.	Margay Oil						
8	2¾	6⅜	2	N.P.	Mexico-Ohio Oil						
....	....	42	8	N.P.	Missouri-Kan. P. L	9,800	27⅛	28⅛	27⅛	28⅛	+ 1
1¾	.76	1½	¼	1	Mountain & Gulf	900	5/8	5/8	5/8	5/8	0
28⅞	19½	22⅞	7	10	Mountain Producers	4,800	10⅛	12	10⅛	12	+ ¼
....	....	43⅞	24	N.P.	Nat. Fuel Gas (new)	1,900	32⅞	35½	32⅞	34⅛	+ 1⅜
5⅝	4¼	5	2¼	5	New Bradford	800	3	3½	3	3½	+ ⅛
5½	3	3⅞	2¾	10	New England Fuel						
11⅞	7⅛	9⅜	2¼	1	New Mex. & Ariz	4,000	6¼	6½	6	6⅛	— ⅛
15½	11½	24½	10⅛	25	New York Petrol						
13¼	8⅜	18½	6⅞	N.P.	North Cent. Texas	600	9	9	9	9	— ¼
....	....	19¼	8⅛	N.P.	Oil Stock, Ltd. A	1,500	10⅜	10⅝	10	10	— ¼
....	....	18¼	8½	N.P.	do B						
26¼	20	26⅝	12⅛	N.P.	Pacific Western Oil	1,900	16	16½	15⅞	16	+ ¼
6	2¼	3½	½	N.P.	Pandem Oil	24,600	2¼	2½	2⅛	2¼	— ⅛
15⅝	8½	10½	2⅛	N.P.	Pantepec Oil	22,600	3⅝	4⅜	3¼	3⅝	0
20	10⅜	25½	22½	$25	Paragon Refg. B ctfs.						
....	....	34½	17	N.P.	Petroleum Corp	12,900	22⅝	23½	22⅝	22⅞	+ ¼
31⅜	26½	37	22	N.P.	Plymouth Oil	1,900	25	25¼	24½	25	+ ⅛
18	8	16	9	25	Red Bank Oil	200	9	9	9	9	0
13	4⅛	8½	1⅜	N.P.	Reiter-Foster	900	3	3	2⅝	2⅝	— ¼
31½	23¼	25½	19	$25	Richfield pfd	700	21½	21½	21½	21½	0
....	....	29	13	....	Root Refining pfd	100	15½	15½	15½	15½	— ½
12	4⅝	11	3	N.P.	Ryan Consolidated	200	4¼	4¼	4	4	— ⅜
7¼	5½	5⅞	1⅞	$10	Salt Creek Cons	100	2½	2½	2½	2½	0
35	23¼	25⅞	9	10	Salt Creek Prod	4,500	13⅜	14⅜	13⅛	14⅜	+ 1
3½	1	2½	½	5	Savoy Oil						
40	27	33⅛	10	25	Shreveport El Dorado						
....	....	24	9	N.P.	Southland Royalty	2,800	10⅛	10¾	10⅛	10½	0
....	....	12	4	N.P.	Sunray Oil	4,600	6¾	7	6⅜	6⅞	+ ¼
....	....	23	7⅛	N.P.	Texon Oil & Land new	700	12½	13⅝	12½	12⅞	+ ⅜
22⅞	13	16⅞	11⅜	$10	Tidal Osage						
21¼	13⅛	16½	10⅛	10	do not-voting						
93¾	75	155	80	100	Transcontinental pfd.						
74¼	18	81⅜	66	10	Venezeula-Mexico						
9⅛	4¾	6½	1⅛	3	Venezuelan Petrol	1,100	4	4	3¾	3¾	— ¼
....	....	66	2¼	N.P.	White Star Oil						
8¼	4⅞	9⅛	2	1	Woodley Petroleum	1,200	3	3⅜	3	3	— ¾
⅜	⅛	5⅜	¼	25	Y Oil & Gas	500	1⅛	1⅜	1⅛	1⅛	— ⅛

*New High †New Low

New York Curb Bonds

Week ending Mar. 28

	High	Low	Last	Change
Cities Serv. 5s '66	88½	87¾	87¾	—1
Cities Serv. G. 5½s '42	88¾	88	88¾	+ ⅝
Cities Serv. G. P. 6s '43	94	92¾	94	+1
Cont. Oil 5¼s '37	97⅝	95½	97⅝	— ⅛
Empire O & R 5½s '42	88½	88	88⅜	— ⅝
Gulf Oil 5s '37	101	100¼	100¼	0
Gulf Oil 5s '47	102	101½	101¾	— ¼
Independent Oil 6s '39	108	106	108	+2
Pure Oil 5½s '40	98½	97¾	98	— ⅜
Sun Oil 5½s '39	102¼	101⅞	102	— ½
Valvoline Oil 7s '37	103½	103½	103½	+ ¾

New York Bonds

Week Ending Mar. 28

	High	Low	Last	Change
Assoc. Oil gold 6s	102¾	102¾	102¾	0
Atlantic Refg. deb. 5s	102½	101¾	102¼	+ ¾
Cal. Pet. 5s	100	99¼	99¼	— ¾
Cal. Pet. 5½s	101¾	101½	101½	+ ½
General Pet. 5s	102	101⅜	101⅜	— ⅝
Humble Oil & Refg. 5s	102	101	102	+1
Humble Oil & Refg. 5½s	102¼	101⅞	101⅞	— ¼
Pan Amer. P. & T. 6s	104	104	104	0
Pan Amer. P. & T. 6s	96¾	95	96¾	+1¾
Phillips Pet. 5½s	95¼	94½	95	0
Pierce Oil deb. 8s	105½	105½	105½	—1½
Pure Oil 5½s	100	99¼	99⅜	— ⅜
Richfield Oil Calif. 6s	97¾	96	97	— ½
Shell Union Oil 5s	98	97½	97¾	+ ¼
Shell Union Oil 5s war	101¼	100¼	100⅝	+ ⅝
Sinclair Con. Oil 7s	104	103¼	103½	— ⅛
Sinclair Con. Oil 6½s	102½	102	102¼	+ ¼
Sinclair Con. Oil 6s D	100¾	100½	100½	0
Sinclair Con. Crude 5½s	100¼	99½	99⅞	— ⅛
Sinclair Pipeline 5s	98½	97¼	98½	+ ½
Skelly Oil 5½s	96	94¾	95½	— ½
S. O. N. J. 5s	103½	102⅝	103½	0
S. O. N. Y. 4½s	97¾	96⅞	97½	0
Union Oil of Calif. 6s A	101½	101¼	101½	0
Union Oil of Calif. 5s A	101⅜	100	101⅜	+ ⅛
Union Oil of Calif. 5s C	100	99¾	100	0
Warner-Quinlan 6s	88½	87	88½	+ ¾
White Eagle Oil 5½s	105	103¾	105	+1⅜

Cleveland Stock Market

Stock	Par	Bid	Asked
Canfield Oil Co	$100	...	115
Fred G. Clark	10	9	10
National Refining Co	25		34
do pfd	100	132	135
Paragon Refining Co	25	11	13
do pfd	N.P.	32	35
do ctfs	..	10½	..